ANNUAL REPORT 1984-85

Department of Agriculture New South Wales

REPORT OF THE DEPARTMENT OF AGRICULTURE

The objectives of the Department of Agriculture, New South Wales, are to safeguard and improve the productivity of the agricultural and fishing industries of New South Wales; and to encourage the orderly marketing of safe, acceptable produce, with consequent improvement in the prosperity and quality of life of both rural and urban communities.

The main aim of this report is to enable the Minister to table in Parliament a comprehensive record of what the Department did to attain its objectives during the year under review.

This report is also distributed to libraries and others throughout Australia and overseas, usually on an exchange basis. It is not intended for the wider audience catered for by other, more regular, publications. More detailed statistical information on agricultural and fishing industries and commodities is available from the Department and from other sources.

for the Year ended 30th June 1985

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Division of Agricultural Services
Department of Agriculture New South Wales

The Hon. J.R. HALLAM
Minister for Agriculture and Fisheries
Sydney

Sir,

I have the honour to present a report reviewing the activities of the Department of Agriculture for the year ended 30th June 1985.

G.H. KNOWLES,
Director-General

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FOREWORD

by the Director-General of Agriculture Mr G.H. Knowles

The Rural Economy

The total gross value of rural production in New South Wales is estimated at $4,351 million for 1984-85. This is a decline of 5.3 per cent on the record value in 1983-84, but still the second highest ever.

Farm costs, however, increased by an estimated 6 per cent, resulting in the net value of rural production falling by 27 per cent in nominal terms from 1983-84 to $1,145 million.

The terms of trade (ratio of prices received to prices paid) of farmers in New South Wales declined by only 0.2 per cent in 1984-85 as a result of a 5.7 per cent increase in prices received and a 5.9 per cent increase in prices paid. By comparison, the terms of trade declined by 2 per cent in 1983-84. The changes in prices received were variable across industries. Prices increased significantly for dried fruit, pig meat, wheat and citrus fruit, but fell for sugar, manufacturing milk and potatoes.

Corporate Plan

A corporate planning document covering a three-year period was issued to staff and other interested persons. The planning process within the Department of Agriculture has increasingly focused on coordinating its wide-ranging activities to achieve its agreed goals. The corporate planning document looks at industry trends, defines corporate objectives and outlines priority activities. The planning process includes a computerised Management Information System and a sophisticated system of allocating financial and human resources.

Export Development

An Export Development Unit has been established as part of a State Government initiative aimed at encouraging exports. Mr Westbrook Haines, previously Executive Director of the New Zealand Horticultural Export Development Committee, has been retained for two years to launch the Department's initiative. Initially, the Unit has concentrated on the horticultural industries and particularly on market opportunities in Asia. The Unit's work has led to the establishment of a Horticultural Export Development Council which comprises 10 members who are experienced in horticultural production and/or export and who now advise the Minister and the Department on the needs of export industries.

Conservation Farming

The agronomic, environmental and economic implications of conservation farming techniques have been brought together in the largest and most important single planned program that the Department has undertaken. The Conservation Farming Program is coordinated by the Principal Agronomist (Conservation Farming), a new position, and reflects the Department's commitment to preserving the State's soils. The Soil Conservation Service works closely with the Department in the program.

Trees on Farms
A special five-year program, closely related to conservation farming, was launched to encourage tree planting. The Trees on Farms Advisory Program is designed to develop and demonstrate the role of trees in today's farming community. Trees are essential in the rural environment because, in addition to their aesthetic value, they provide shade, shelter, food and timber as well as being an aid in reducing salinity and erosion problems. The program pools the skills and resources of the Department of Agriculture, the Soil Conservation Service and the Forestry Commission and is overseen by a Departmental Horticulturist working as full-time coordinator.

Land Protection
A document on the Department's policy on the protection of agricultural land has been released. The policy was developed to meet requirements of land use planning and to provide a basis for consideration by departmental officers of Local Environment Plans, Regional Environment Plans and Environmental Impact Studies. The policy acknowledges that the basic unit of production in Australian agriculture will remain, for the foreseeable future, the family-owned farm, and supports the concept of a holding size capable of supporting efficient, sustainable production. It addresses the problem of applying uniform minimum sub-division criteria on a Statewide basis. It also strongly supports the retention of good agricultural land for commercial food and fibre production and encourages the use of lower quality agricultural land for rural-residential and similar sub-division.

Industry Consultative Committees
To foster liaison between the Department of Agriculture and the primary industries, consultative groups have been established in all regions. The groups comprise representatives of the Livestock and Grain Producers' Association, the Cattlemen's Union and members of the Department's Regional Boards of Management. In larger regions, several consultative groups have been formed. Similar groups have been established to cater for the fishing industry. The Fisheries Consultative Committees include representatives of amateur fishermen's organisations, professional fishermen and the Department.

Badly eroded and heavily cleared landscapes create problems for both present and future primary producers. The advisory programs on Conservation Farming and Trees on Farms are part of the Department's advisory efforts in these problem areas.

Farrer Medalist
Dr W.V. Single, Principal Research Scientist at the Agricultural Research Centre, Tamworth, was awarded the 1984 Farrer Memorial Medal. The award is conferred annually with a view to perpetuating the memoryof William James Farrer and to provide encouragement and inspiration to those engaged in agricultural science. Dr Single is well-known nationally and internationally for his research into frost injury in wheat.

Capital Works
A greatly increased allocation for capital works enabled the Department to undertake a balanced, ongoing capital works program. The $6.4 million allocation ($0.8 million 1983-84) allowed work to begin on, among other things, a new chemistry building at the Biological and Chemical Research Institute, Rydalmere; advisory staff accommodation at the Yanco Agricultural Institute; hatchery and tourist facilities at both the Gaden Trout Hatchery at Jindabyne and the Dutton Trout Hatchery at Ebor; and laboratory and office accommodation at the Horticultural Research Station, Gosford. It also permitted the completion of the Boar Performance Test Station at the C.B. Alexander Agricultural College and of tourist facilities at the Inland Fisheries Research Station, Narrandera.

Pacific Oysters
Large numbers of the exotic Pacific oyster have been found in Port Stephens. The Pacific oyster grows at about twice the rate of the native Sydney rock oyster and is an extremely vigorous breeder. Its spawning and settling requirements are less specific than the Sydney rock oyster. Because of the importance of Port Stephens as a source of commercial oyster spat, restrictions have been placed on the movement of oysters from the Port Stephens area in an attempt to reduce the risk of the spread of Pacific oysters to other areas.

Plague Locusts
The most intensive plague encountered for many years occurred in the spring of 1984. A combined campaign by the Department of Agriculture, landholders, and the Australian Plague Locust Commission (APLC) saved Riverina crops worth over $150 million. So successful were the control measures that the plague attracted little attention outside the affected area.

European Wasps
The numbers of European wasp nests destroyed by the Department of Agriculture increased dramatically. The Department destroyed all nests reported to it, although there were delays during the peak of the season. Priority was given to destroying nests that were located near schools, hospitals and homes for the elderly. Wider community involvement in the control of European wasps was urged. Pest controllers and staff of Local Government Councils were briefed on control methods, and information about the wasps was widely distributed throughout the State.

AGRICULTURE & FISHERIES IN 1984-85

WHEAT

Production and Trends

The 1984 wheat crop suffered a series of setbacks but was still one of the larger crops harvested in the State. There were in fact two crops. The first was planted in late April on good general rains which provided excellent sowing conditions for those farmers who had land ready and the right varieties. About 40 per cent of the total crop was sown on this rain. Growers who chose to work their land to kill weeds or produce a better seedbed generally found the moisture did not last long enough to allow them to sow.

The dry weather in May and June delayed further sowing, and the 'second' crop could not be planted until rain started in early July.The rain continued, however, and this further delayed sowing; some farmers sowed right up until late August. Overall, 3.6 million ha of wheat were sown in the State, 400 000 ha less than if the season had been more favourable.

The total crop, the sixth largest on record, was estimated at 5.79 million tonnes.

Problems

Stripe rust was reported in some crops in the central west in mid-May, the earliest it had been seen on field crops in Australia, and another major epidemic appeared imminent. However, the dry winter slowed development, and although some crops were heavily infected in the vegetative stage in central and southern areas, few farmers sprayed for the disease. In the spring, the plants' adult resistance began to operate and the disease disappeared almost overnight. It probably caused only minor yield reductions.

Apart from stripe rust, diseases were not significant on wheat in New South Wales, but unfortunately a new race of stem rust which can attack the valuable Cook variety was found in Queensland.

The biggest setback to the crop was caused by unusually late frosts. In the north, a heavy frost in late September caused extensive damage, some large areas being almost wiped out. While damage was almost universal, heaviest losses appeared to be in areas west of the Newell Highway. This was followed by a series of heavy frosts over several days in central and southern areas in mid-October, and in this case damage seemed to be heaviest in the eastern side of the wheat belt.

It is not easy to estimate losses caused by frost, but it is likely that some 15 per cent of the State's wheat crop, or 900 000 tonnes worth $130 million, was lost to the late frosts.

Wheat research continues to assist growers by reducing disease and improving yields.

Wheat Marketing Act

The introduction of the new Wheat Marketing Act allowed grain to be traded for stockfeed manufacture by permit, with no control over price. It appeared that almost 200 000 tonnes of wheat were traded by this means by the end of the financial year.

Research

Eyespot lodging is caused by the fungus *Pseudocercosporella herpotrichoides* and occurs in the higher rainfall areas of the central and southern wheatbelt. It can cause overall losses amounting to many millions of dollars per annum, with individual growers suffering almost total losses.

As part of a program on disease management, research on control of eyespot lodging over the past two seasons has been carried out in the Wagga Wagga and Junee districts, utilising strategic fungicide applications.

This work has pinpointed the most appropriate time to apply fungicidal sprays to wheat crops to obtain the greatest response in terms of eyespot lodging control and yield. These studies should provide an excellent guide to growers faced with an eyespot lodging problem.

OTHER CEREALS

Production and Trends

The other winter cereal crops followed the fortunes of wheat to some extent. The area sown to oats was well down on previous years due to the carry over of grain from the huge 1983 harvest, with most being sown on the rains in March and April. The area sown was estimated to be only 573 000 ha (compared to 1.17 million ha in 1983) with a grain production of 348 000 tonnes.

Most of the barley was sown late, but with its earlier maturity it performed very well. An area of 611 000 ha was sown, producing a harvest of 941 000 tonnes, equal to the record crop of 1983.

The area sown to triticale continued to expand, with 103 000 ha producing 203 000 tonnes of grain.

The 1984-85 rice crop was very successful, the area sown being estimated at 122 000 ha. Despite a difficult start due to cool weather in December and January, the crop recovered well in February and March which were much warmer. The later than normal harvest proceeded with only a few interruptions from rain, and

was substantially completed by late May. The total crop could reach 840 000 tonnes of generally good quality grain. The new semi-dwarf variety, M7, performed very well in most situations but disappointed a few farmers. The reasons for this are being investigated.

There was a lot of interest in the north in the summer cereals, maize and sorghum, for paddocks intended for wheat but too wet to sow. There was also a good deal of commercial promotion of dryland maize.Good rains in September allowed extensive sowing of sorghum and maize,estimated at 237 000 ha of sorghum and 20 000 ha of maize. Unfortunately the summer rains virtually failed over the inland and the crops had to make do on water stored in the soil.

Many maize crops performed poorly and some failed. Generally the most successful crops were sown early and were on the upper slopes rather than the lower slopes and plains. Irrigated crops in the northern inland and in the Murrumbidgee Valley did very well indeed, and dryland crops on the north coast were favoured by a wet March after a dry spell in January and February.

Sorghum crops generally did better than maize in the north, but some failed and others did poorly. Again the early crops did better. The harvest was estimated at 280 000 tonnes of sorghum and 80 000 tonnes of maize.

Remote Sensing

Landsat data were used in the specialist rice monitor procedure to monitor rice growing in the Murrumbidgee Irrigation Area during the season. The work will be continued in 1985-86 for the Yanco Irrigation Area as part of a program to evaluate French high resolution satellite data, for which the Department has been accepted as one of 30 principal investigators worldwide.

Barley Quality

The presence in barley of the carbohydrate beta-glucan can seriously affect the quality of products from the malting and brewing industries. A simplified procedure to measure barley beta-glucan has now been developed by chemists at the Biological and Chemical Research Institute, Rydalmere. The new method has been incorporated into the Department's barley breeding program.

OTHER FIELD CROPS

Production and Trends

There has been a steady expansion in the area sown to grain legume crops. Lupins did particularly well, the April rain being ideal for sowing the estimated 50 000 ha, which produced 66 000 tonnes.

The table below shows the trends in the production of the more important non-cereal field crops.

Crop	hectares 1983-84*	1984-85†
Cotton	104 523	126 400
Linseed	1 581	2 550
Rapeseed	9 083	17 360
Safflower	20 591	8 660
Soybean	17 249	30 000
Sunflower	75 101	128 180
Tobacco	477	337
Lupins	23 157	50 000
Cowpeas	5 457	4 900
Mung and Dry Beans	3 153	2 100

Sources: * Australian Bureau of Statistics
† Department of Agriculture New South Wales, District Agronomist Survey Reports

Cotton

As in the preceding season, plantings increased substantially, including a 50 per cent increase in raingrown plantings. Though sowing conditions were cool early, increasing temperatures and variable storms in the eastern cotton growing areas resulted in good late spring growth. High summer temperatures and dry January-February weather promoted excellent growth in irrigated crops but seriously retarded most raingrown crops.High average yields were obtained in all irrigated areas. Production from New South Wales was expected to reach 770 000 bales, which, with seed, would have a capital city value of approximately $310 million. As a consequence of a much improved growing season, fibre quality was particularly good.

Bacterial blight disease was prevalent in crops in eastern areas where spring storms occurred. Severe losses could have occurred but for mostly dry conditions in autumn.

The SIRATAC management system for cotton gained further commercial acceptance and was applied to almost 45 000 hectares. The synthetic pyrethroid insecticide cooperative strategy, with minor modifications,was again applied successfully to a range of summer and winter crops,including cotton, to inhibit further insecticide resistance in *Heliothis armiger*.

Rapeseed

Early estimates for a tripling of 1984-5 rapeseed areas foundered due to a dry autumn; the area in fact almost doubled. The good average yield, estimated at 1.2 tonnes per hectare, associated with unsatisfactory wheat returns, created unparalleled interest for 1985 sowings and prospects for 60 000 or more ha. Again, these intentions were not achieved because of dry autumn conditions, only 43 000 ha being sown.

Soybean

Several factors encouraged a 75 per cent increase in plantings. Among the most important were imported seed, capital city price prospects,irrigation water supplies, poor returns from rice and the availability of new varieties for raingrown production.

Although raingrown crops inland suffered dry weather stress during summer, they responded well to the rain that did occur. Irrigated crops responded to good weather conditions with high average yields.

Raingrown coastal plantings were less than the preceding year. At harvest most crops suffered some weather damage, sometimes heavy.

Production was estimated at 45 000 tonnes. If achieved, this would be 12 per cent more than the previous best in 1979-80.

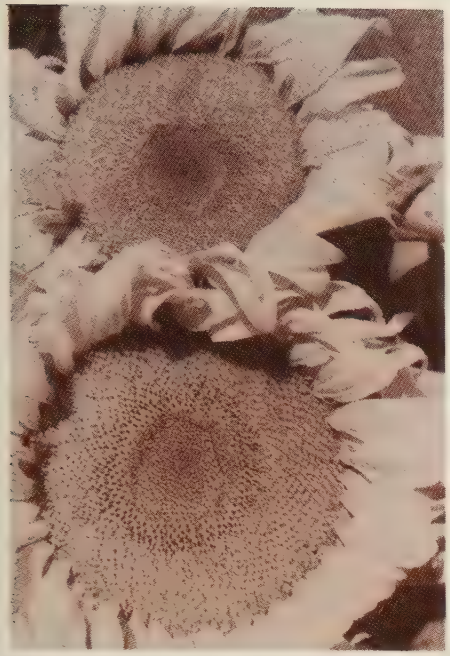
Sunflower

The sunflower sowing of 128 000 hectares was the largest for a decade.This was caused by the impossibility of planting substantial north west areas to wheat, followed by favourable early planting opportunities on good subsoil moisture. Ninety per cent of the area was early sown — that is, August to November. The majority was raingrown under mild and generally favourable spring conditions which resulted in high yields. New South Wales production was assessed at 102 000 tonnes.

Tobacco

The sale of marketing quotas to Queensland producers and the farm recovery program resulted in a sharp reduction in plantings from 477 to 337 ha.

Yields were satisfactory, but early harvest quality was impaired by hot summer conditions. Prices received from the first sale were disappointing to growers.



Commercial sunflower cultivars have been found to have 10 to 40 per cent contamination of off-type female heads that do not produce pollen (top). These heads produce normal seed only when pollen from another head. A normal head is shown at bottom.

Jojoba and Aloe Vera
Commercial promotion of these crops continued but few plantings were made. Substantial canvassing for investment, particularly in jojoba projects, took place on the basis of unsubstantiated yield and profit claims.

Tea
Results of field experiments and small scale pioneering commercial production demonstrated that tea can be profitably produced in the far north coast area. Results of experiments also show that high yields are possible where an appropriate site is selected and sound management practices are applied.

Coffee
Pioneering production of coffee has been underway in the Tweed Valley. A dry green bean yield of 2.5 tonnes per hectare has been achieved on a very small commercial scale. Field experiments to further investigate commercial prospects have been commenced.

Essential Oils
In an investigation of 55 new essential oil sources, *Eucalyptus campanulata* and *Phebalium dentatum* showed most promise, the first as a source of the perfumery constituent methyl cinnamate, and the second as a passionfruit aroma. The oil of *Boronia latipinna* has also been subjected to perfumery assessment and insecticide bioassay and has been valued by the perfumery trade at $6 to $10 per kg.

Tea Tree Oil: Extensive claims in respect of overseas market opportunities for the oil of *Melaleuca alternifolia* continued to be made.

Substantial interest in, and action to promote, production occurred during the year, including prospects of overseas investment.

Steady promotion of domestic market opportunities has been pursued by one producer/marketer through health food stores. Prospects are for expanded consumption of this antiseptic germicidal oil where it conforms to the Australian Standard K175.

Guayule
Field experiments were carried out to examine guayule cultivars and populations under irrigation and raingrown conditions near Hillston. This was part of a cooperative program with CSIRO, funded by the Reserve Bank of Australia's Rural Credits Fund, which is now completed.

The first harvests were made during 1984. Harvests should continue to 1989, following which a full assessment of guayule rubber prospects should be possible.

PASTURES

Production and Trends
The gross value of wool, sheep meat and beef produced from pastures was $1301 m which represents one third of the total value of agricultural production in New South Wales. Pasture hay was worth $102 m and the value of pasture seed was $4 m.

The sown pasture area increased by 6 per cent to 4.8 m ha. Lucerne gained wide acceptance and the area sown increased by 94 per cent to 0.46 m ha.

Problems
Establishment of pastures, particularly lucerne, was poor in many locations because the correct procedures were not followed. The Department is producing display boards for use at field days outlining the important steps for successful pasture establishment. An inter-regional advisory program concerning the problem of acid soils has been initiated. District agronomists have been issued with soil testing kits for testing pH and assessing aluminium toxicity on the farm. Lime trials and

The Agplan computer program, developed by Departmental staff, identifies the most profitable fertiliser rates for sheep, beef and wheat enterprises.

demonstrations are being conducted and video films, display boards and Agfacts are being produced to increase awareness of factors contributing to the acid soil problem.

Core trials, supervised by district agronomists, have been established on farmers' properties throughout the State. Varieties of lucerne, subterranean clover, medics, perennial grasses and miscellaneous legumes will be evaluated in these experiments. The results will complement detailed research projects conducted at research establishments. Results of evaluation research were used to produce Agfacts and a wall chart which summarises the pasture recommendations for the State.

Subterranean Clover
In cooperation with the Victorian Department of Agriculture a survey was made of subterranean clover samples from the main areas in which it is grown. *Phytophthora clandestina* was identified in all samples and is now recognised as a major root rot disease of subterranean clover. It causes a serious decline in autumn production, particularly under irrigation.

Lucerne
The Department's lucerne breeding program at Yanco has made significant progress towards the breeding and selection of a new variety with improved aphid and disease resistance.

Grasses
A program of cooperation between the Department, the University of New England and The Soil Conservation Service of New South Wales was established to domesticate selected native grasses for the tableland environment. Perennial ryegrass cultivars are being tested. Experiments to determine the irrigation scheduling procedure for Ellett ryegrass are located at coastal sites which cover the environments from north to south.

Advisory
The Department was involved in facilitating the formation of the Grassland Society of New South Wales. The Society aims to be a forum in which to exchange ideas about pasture production and promoting improved pasture husbandry.

CITRUS

Production and Trends
A record production of 255 991 tonnes was 20 per cent above the previous small crop. Seasonal conditions were generally mild and favourable for fruit quality following recent frosts and drought years. The very strong demand by processors for Valencia oranges continued, the price increasing significantly during the season. Normal crops of lemons, mandarins and grapefruit were produced, but the demand for lemons declined and problems arose in their economic disposal.

New South Wales is not a major exporter, but industry is showing interest in the new potential of exports to Japan and increased quantities may be supplied in the future.

Due to the world supply and price situation, less fresh fruit and frozen orange juice concentrate were imported compared with the previous year.

An Industry Minimum Pricing Committee recommended for the first time minimum prices (previously determined by the Fruit Industry Sugar Concession Committee) for processing fruit through existing statutory citrus boards. For Valencia oranges it was $140 per tonne (up $20) and for lemons, $105 per tonne (up $5). In the Sunraysia area, payments were mainly made on a total soluble solids basis.

Plantings continued to expand, with a further increase of 209 ha. The total is now 13 013 ha with 14.6 per cent non-bearing. Although citrus plantings declined generally until 1977, they have since increased 1226 ha due to extensive new plantings of Valencia oranges in the Murrumbidgee Irrigation Areas and at Hillston.

Citrus Rootstock Research
A major Plant Improvement Program continued during the year with the screening of new citrus rootstocks. Over 100 new (bred or imported) rootstocks are being field evaluated for important commercial varieties at the Gosford Horticultural Research Station.

Screening for the major fungus disease *Phytophthora citrophthora*, which causes serious root and collar rot problems in citrus, is also being progressively carried out at the Biological & Chemical Research Institute, Rydalmere for all these rootstocks.

A new aspect of this program is the breeding and preliminary screening of new rootstocks in cooperation with the CSIRO, Merbein, particularly for salt tolerance, which will be carried out at the Agricultural Research & Advisory Station, Dareton.

Japanese Market and Disinfestation Program
After many years of detailed disinfestation research at the Horticultural Postharvest Laboratory, Gosford, mainly with ethylene dibromide fumigation (EDB) to control Queensland fruit fly (*Dacus tryoni*), and negotiations with Japanese authorities, a second small consignment of citrus was exported from Australia in 1984. Although this market appears to offer considerable potential for expansion, there is concern about the use of EDB. Maximum residue levels were reduced in 1985 with the likelihood of EDB being completely banned in the future.

This has led to new research into alternative disinfestation treatments.

POME FRUITS

Production and Trends
Estimated production of 86 000 tonnes of apples in 1985 was 3000 tonnes higher than last year. Estimated pear production of 10 000 tonnes was 17 per cent lower than last year.

The growing season began with an abundance of rain in major districts.This created conditions very favourable for apple scab disease which subsequently proved troublesome. Significant frost damage reduced crops in New England and Bathurst and led to some loss of quality there and in some other districts. Throughout late spring and summer conditions became very dry, resulting in reduction of fruit size and poor colour development for much of the crops. The late maturing Granny Smith was able to respond to good rainfalls in March.

More apples than normal are likely to be processed, especially for juice, because of poor size, colour and over-maturity.

Modern Asian pear varieties are a new commodity and are being examined by the Department. Asian pears (*Pyrus pyrifolia*) differ from the familiar European pears (*Pyrus communis*) in that they do not soften when ripe, but remain firm, crunchy and very juicy.

Research at the Tropical Fruit Research Station, Alstonville, is evaluating the effect of sealed banana bunch covers on harvest date, yield and fruit quality.

The orchard census as at December 1984 showed that the total number of apple trees increased by 54 000 compared with December 1983. Plantings of traditional European pear varieties showed little movement but total pear tree numbers increased by 2000 as a result of plantings of the new Asian pears.

On current trends, the Department predicts that to 1989-90 apple production will remain static except for fluctuations resulting from biennial bearing characteristics. However, there will be significant changes to varietal structure. Production of highly coloured strains of Delicious will increase while Jonathan and Granny Smith will decrease. Pears are also subject to a biennial bearing pattern. Production of traditional pears is expected to decline. The first of the Asian pear plantings, mainly located at Coffs Harbour, will be producing marketable parcels of fruit by 1989-90.

Cool Storage Seminar

A well attended seminar on cool storage was conducted by the Department to advise pome fruit growers and cool store operators on new technology. The goal was the adoption of improved management practices leading to improvement in quality of pome fruits marketed. A survey of cool stores in April 1985 showed that there are 241 cool stores in New South Wales used wholly or partly for pome fruits. The storage capacity is 4 991 000 x 18 kg cartons, 52 per cent of which is Controlled Atmosphere storage. These stores exclude those used solely for transit, wholesaling, retailing or processing.

TROPICAL FRUITS

Bananas

The area grown to bananas in New South Wales was 6751 ha, an increase of only 136 ha. Production rose to an estimated 76 730tonnes (compared to 64 000 tonnes from Queensland) despite losses in the Coffs Harbour area caused by four hailstorms in December and strong winds in May. As production from north Queensland was reduced by cold weather in July and then by dry conditions in early summer, New South Wales growers received abnormally high prices for their fruit over that period.

The New South Wales banana industry has previously been envied for the high degree of organisation provided by the Banana Growers Federation Co-operative Ltd in financing such things as promotion, research, and pest and disease control. However, with greater use of private road transport and direct sales to chain stores, approximately 25 per cent of production avoided charges raised for these purposes. The Co-operative was forced to introduce changes to its structure and other measures to improve the situation.

Departmental research continued into the evaluation of tissue culture techniques in bananas, crop forecasting, manipulation of crop cycling and bunch cover technology. Bunch cover research included their use in the scheduling of harvest for marketing.

Avocados

Avocado production continued to rise as newer plantings began production, and those already bearing increased yields with age. The high rate of planting new orchards as experienced in the 1970s has slowed dramatically, and the prolonged period of wet weather in February-May will result in losses of trees due to Phytophthora root rot.

The fungicide prochloraz was commercially introduced as a postharvest treatment for anthracnose fruit rot. In combination with the program of protective sprays in the orchard, the postharvest treatment greatly reduces the risk of consumers buying apparently sound fruit only to have rots develop before ripening. With the exceptionally wet conditions experienced in the autumn, anthracnose will be a serious problem in unsprayed orchards.

Custard Apples

As production of custard apples (Atemoya) continued to rise, growers became increasingly interested in exporting. The perishable nature of the fruit caused problems when some trial consignments were subjected to excessively high or low temperatures. Exports were made to Hong Kong, Singapore, Vancouver and the Persian Gulf countries. Consignments were also accepted into the high priced Perth market, reducing pressure on markets in eastern States. Quantities sold in Sydney now exceed those for Brisbane — the traditional major market for custard apples. Prices on the Sydney market have increased 10 per cent annually since 1977, even though consignments have almost doubled.

Plantings increased further during the year but at a lower level than in the late 1970s. Increased interest is being shown in Cherimoya varieties and

hybrids between Cherimoya and Atemoya which generally have increased cold tolerance and a more 'tangy' flavour than the sweeter custard apples.

Casimiroa
Plantings of Casimiroa (or white sapote) are increasing but further development is hampered by a lack of data on varietal performance and cultural requirements in this country. The Department is collecting this information.

Passionfruit
In mid-winter of 1984 a new disease caused heavy losses of fruit and plants in two plantations at North Tumbulgum. The disease, named 'Dieback', is caused by a combined infection of the vine by Cucumber Mosaic Virus (CMV) and Passionfruit Woodiness Virus (PWV).

The disease caused wilting of the tips, followed by a gradual dieback which spread along the canes and killed some infected vines. Fruit on affected vines failed to fill, showed malformation and bright yellow blotches surrounded by a diffuse yellow discolouration.

In a further six plantations on the far north coast infections were less severe and fruit losses were lighter.

Lychees
Although production is increasing as the 150 ha of planted trees progressively mature, the crop totalled only 12 tonnes. With the wholesale price of fruit approximating $5/kg, this industry will quickly provide an economic boost to northern New South Wales. Exports were made to Papua New Guinea and Singapore.

New plantings continued, especially with high quality varieties such as Bosworth No.3, Bosworth No.10, No Mai Chee and Wai Chee which are well suited to export markets. The development of a postharvest hot water plus fungicide treatment has ensured adequate shelf life for exports to the northern hemisphere.

Macadamias
The area grown to macadamias increased to 3147 ha and, as more plantations reached bearing age, production exceeded 800 tonnes of nut in shell. Some 80 per cent of production was exported and this percentage will be maintained as production rises sharply over the next five years. Dried and processed kernel was exported to Europe, America, Japan and South-east Asia.

Although an industry-organised cooperative buying scheme to ensure orderly marketing of the export component operated well in the past, disagreement developed during the year between two major processors. As a result, all five Australian macadamia processors competed vigorously for the crop. Prices rose to over $2 per kg for 'nut in shell' due to the fierce competition, the devaluation of the Australian dollar, and a drought-induced shortage of nuts in Hawaii.

Subtropical Fruit Umbrella
Some of the various industry organisations saw a need to ensure effective marketing by developing an all-embracing organisation or 'umbrella'. The Department convened and chaired meetings to determine industry support and subsequently form an organisation whose aims include the development of brand names for, and promotion of, north coast horticultural produce, the setting of standards for packing houses, quality standards for the produce and the provision of market information.

The Scion Accreditation Scheme has had outstanding results in improving the quality of propagation material for the passionfruit industry in New South Wales.

STONE AND BERRY FRUITS

Cherries
The 1984-85 cherry crop was harvested in ideal conditions, the harvest period being almost entirely free from rain. Growers at Young experienced one of their best seasons on record although the crop was considerably less than prior to the drought period. Production was 2880 tonnes, representing an increase of 10 per cent over the previous crop. Returns from the Sydney and Brisbane markets were excellent and there is renewed interest in expansion. Contrary to predictions, cherry plantings increased by 43 ha over the period, the result of intense interest in replanting at Young. The non-bearing area now comprises 15 per cent compared with only 9 per cent in 1983.

Pitting in Cherry Crops
Chemical analysis of cherries grown near Orange has shown that pitting is caused by boron deficiency. One kilogram of affected fruit contained only 6 — 14 mg of boron compared to 19 — 25 mg in healthy fruit. The problem could be eliminated by spraying the trees with a boron solution.

Peaches and Nectarines
Dessert peaches and nectarines produced 11 090 and 2290 tonnes respectively, which was 22 per cent less and 38 per cent more than the previous crops. Once again this season crops in the Central West were severely reduced by late frosts, and damage also occurred at Mudgee and in the Araluen Valley. Plantings showed a net increase of 12 ha, although in the case of nectarines the total increase was 64 ha. Non-bearing nectarines now comprise 35 per cent of total plantings which indicates the popularity of this fruit and the likely production increase over the next few years.

The canning peach crop was surprisingly high at 11 283 tonnes, the average yield of 26 tonnes per ha being one of the best on record for the MIA. Despite this, plantings continued to decline by a further 61 ha to a total of

only 460 ha with the non-bearing area now comprising only 5 per cent of the total.

Plums
Japanese and European plum crops were 5730 and 1200 tonnes, 5 per cent more and 25 per cent less respectively than the 1983-84 crops. Plantings of Japanese plums fell by 11 ha while European plums increased by 17 ha.

Apricots
Apricot production of 2400 tonnes was 36 per cent below the previous crop and plantings showed a further decline of 30 ha. Although there is a slight interest in early varieties, production of canning apricots in the MIA continued to fall, with only 5 per cent of the area non-bearing.

Prunes
Prune production of 2618 dry tonnes was 12 per cent higher than the 1983-84 crop, the fruit being harvested in ideal seasonal conditions. Plantings showed a small net increase for the first time in several years.

Kiwifruit
Kiwifruit plantings increased by 62 ha to a total of 192 ha of which 43 per cent represented non-bearing vines. Growers had a disappointing season following hail damage on the north coast and poor prices on the Sydney market. Imports from New Zealand and California increased.

Persimmons
Persimmon plantings increased by 59 ha to 95 ha, most of the expansion taking place around Coffs Harbour. Prices for fruit were disappointing.

Blueberries
Blueberry plantings increased by 64 ha to a total of 101 ha with further expansion projected.

Strawberries
Plantings of strawberries declined by a further 10 ha to 54 ha. Very disappointing prices were reported by growers for fruit marketed in Sydney.

GRAPES

Production and Trends
Grapes crushed for wine were estimated at 172 500 tonnes, a New South Wales record. This was due to a heavier than expected 110 000 tonnes crush on the MIA (another record) and New South Wales Sunraysia, where the winery capacity of the existing Buronga winery was increased and a new winery was in operation.

For the sixth year in succession, minimum prices for dual purpose grapes grown along the Murray River were successfully negotiated under the Winegrape Processing Industry Acts of New South Wales and Victoria.

Seasonal conditions for dried vine fruits were the best since 1951. Although the crop was only average, the hot, dry weather was ideal for harvesting and drying, resulting in high quality currants and sultanas and no pest and disease problems. Export market prospects were excellent, guaranteeing significant increases in returns in contrast to the bleak outlook a few months earlier.

Area of grape vines declined by 100 ha to 14 535 ha, partly due to removals of unproductive plantings in the Hunter Valley, mostly of the variety Shiraz. The MIA area dropped 46 ha, indicating the continued adjustment in response to recommendations of the Winegrape Planting Advisory Committee which utilises departmental statistics and projections.

Vine Improvement
As part of the New South Wales Vine Improvement Scheme, the newly formed MIA Vine Improvement Society undertook the administration of supply and sale of approved source grape vine cuttings under the Horticultural Stock and Nurseries Act, acting as agent for the New South Wales Horticultural Propagation Cooperative Society Ltd. In 1984 over 1 000 000 cuttings were handled. The Central Tablelands Vine Improvement Committee was also very active establishing Chardonnay and Pinot Noir clonal selection trials at Mudgee and Boorowa respectively.

Following evaluation for wine quality and agronomic characteristics in clonal trials, several selections were propagated for inclusion as Vine Improvement Scheme Registered Mother Vine Plantings. These are a Swiss clone, Pinot Noir Mariafeld, a Dareton clone, Gordo J2, and Taminga, a new variety bred at Merbein by the late Dr Allan Antcliff. This variety, because of its yield potential and fruitiness, somewhat akin to Traminer, is showing considerable promise for irrigated areas.

Trials
Nutritional studies in rootstocks and clonal selection trials showed a strong correlation between arginine level in the grape juice and vine productivity. Arginine is an amino acid which is used as a measurement of nitrogen level in the plant tissue.

In a trial of sultana grapevines irrigated with saline water at Dareton, the highest level of salinity (3400 EC units) reduced the productivity of vines to 48 per cent of the yield of vines irrigated with normal river water after three years. Affected vines deteriorated further over the last year with some deaths.

In a sultana rootstock and trellising trial at Dareton, it was found that the swing arm system was best suited to obtaining quality dried fruit using the trellis drying technique. With the swing arm, the fruiting canes are supported by horizontally placed wires on one side of the row, while shoots for next season's canes are developed on a near vertical set of wires. In the next season the trellis is swung over and the procedure repeated. This system could replace the more labour intensive normal harvest and rack drying procedure.

VEGETABLES

Production and Trends
With the return to more normal climatic conditions the area and production of vegetables increased to pre-drought levels. However, nearly all growers experienced severe competition from supplies from Queensland and Victoria. This caused a reduction in plantings of lettuce and fresh market tomatoes. Vegetable processors met strong competition from imported products, especially frozen peas and beans from the U.S.A. and New Zealand. Areas planted to both of these crops fell as a consequence.

Farmers continued to adopt the modern technology advocated by the Department. Many are now using a combination of raised beds, black plastic mulch and drip irrigation. Although the costs are high the benefits are substantial and profitable. The swing into hydroponic production continued, especially with lettuce.

The apparent success of some hydroponic production units is attributed largely to the technical support provided by departmental officers. There are now more than a dozen units in coastal districts north of Sydney.

Potatoes
Production for 1984-85 has been forecast at 105 000 tonnes and this indicates a fairly steady situation.

However, overall production throughout Australia was significantly greater than requirements, so markets were glutted and prices depressed.

The Department continued to progress with tissue culture and multiplication facilities at the Yanco Agricultural Institute as the basis for the potato certification scheme. The first minitubers from Yanco were grown on at Crookwell, and planting material is now ready for distribution to certified seed growers. Also, the first of the district cultivar trials was harvested. This forms part of the inter-regional cultivar evaluation program.

All potato crops in the Murray and Riverina Region were surveyed for the presence of bacterial wilt. The disease was located in a number of crops, mostly in the Coleambally and Narrandera localities.

A potato cultivar workshop was held at Terrigal to discuss the direction in which the industry should be heading in its breeding and cultivar evaluation programs. Representatives from all State Departments of Agriculture, processing companies and some Commonwealth Departments attended.

Mushrooms

Although production in New South Wales was well maintained there was an increase in other States, so that competition on the fresh market was constant. This was accentuated by imports of fresh mushrooms from New Zealand.

Departmental officers were largely responsible for the construction of a machine called a 'counter current extractor' which enables peat used for casing to be regenerated with associated cost savings.

A newsletter for mushroom growers was begun to improve communication with growers.

Tomatoes

Fresh market production declined slightly in the face of massive competition from Queensland, but production for processing was a record at 54 000 tonnes.

Nutritional investigations using lysimeters at the Tropical Fruit Research Station, Alstonville, determined the optimal levels of nutrient supply to plants throughout their life cycle. This work will be of immediate value to growers using drip irrigation.

Useful progress in the breeding program was made in the development of a fresh market cultivar.

Further processing cultivars were evaluated at Yanco.

Onions and Garlic

Total onion production (packout) was approximately 22 000 tonnes which is a little below recent years because of lower paddock yields. There was active interest in the production of red salad cultivars and the late planting of hybrid cultivars to extend the season.

Garlic production increased by more than 100 per cent during the year.

Further investigations into the control of black mould (*Aspergillus*) showed that field spraying of fungicides was not effective. Postharvest dipping in the fungicide Sportak® was effective, however, and recommendations for growers will be devised.

Two officers in the Murray and Riverina Region inaugurated and brought out the first edition of the 'Australian Onion Grower', a journal for onion and garlic growers throughout Australia. It was received with enthusiasm.

Garlic investigations showed that storage life could be increased substantially by preharvest sprays of maleic hydrazide. Field trials with a number of cultivars showed that the standard cultivar, Italian White, is not as good as some of the recently imported cultivars.Time of planting trials were also in progress.

® registered trade name

Asparagus

The season was quite favourable for production for processing which was maintained at the lower levels of recent years. Substantial quantities of processed asparagus were imported.

Interest in production for the fresh market and for export was quite high.

The major departmental effort was with the cultivar trials at Yanco and Leeton. More than 50 cultivars have been established and some interesting yield information has become available.

ORNAMENTALS

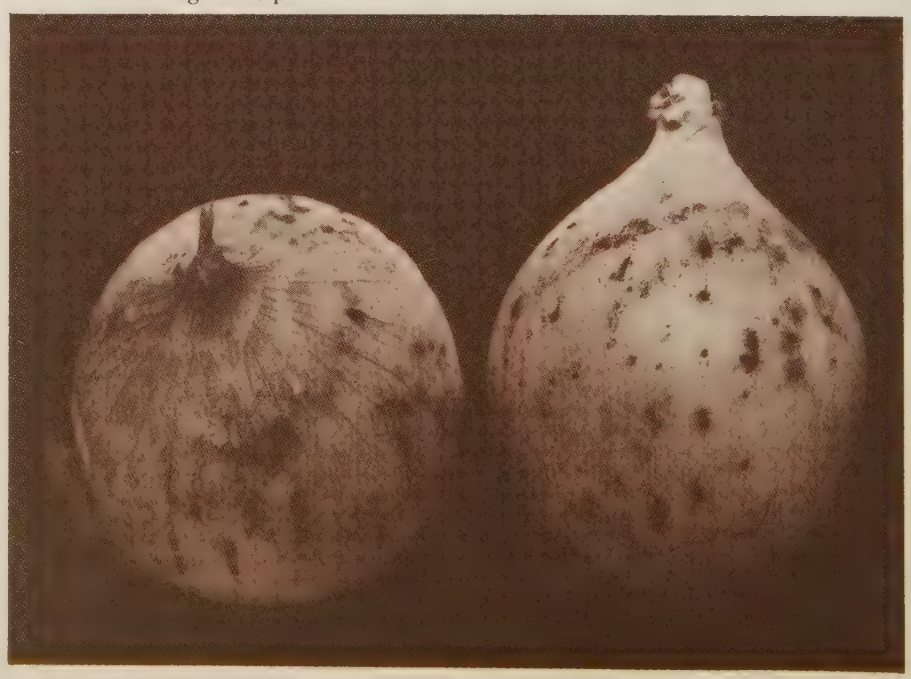
Production and Trends

Nurseries: There has been overproduction in many areas of the nursery industry for several years. Competition remained fierce and even established nurseries continued to have difficulties. Many nurseries sold at below cost to maintain cash flow. Product prices have not risen at the same rate as costs and there is immense pressure to reduce the latter. Most nurserymen are looking at ways of reducing the 30-50 per cent of the costs of production attributed to labour.

The skills required to undertake precision growing are not common among nurserymen who often lack basic horticultural training or have been unable to keep abreast of current developments. In response to the need for more grower education, six one-day workshops were conducted for nurserymen during the year on the mid-north coast.

Over recent years many nurseries have been established on the north coast. The fact that plants are transported long distances to markets in

Black mould (*Aspergillus*) of onions, an important postharvest disease, responded to control with a fungicide dip.



Sydney has highlighted the need for more care with post-production handling.

Cut Flowers: There was considerable interest in cut flower growing, both from established farmers wishing to diversify, and from members of the public who see this enterprise as a way of obtaining income quickly and easily. While carnations, chrysanthemums and roses continued to be produced in the largest quantities, flower growers are gradually increasing production of crops such as gerberas, and introducing flowers new to this State, such as lisianthus.

Plantings of proteas, waratahs and related species continued to increase. By 1987 there will be large numbers of blooms available for sale and growers are exploring the possibilities of export.

Research

There is increasing pressure to improve postharvest handling techniques for all types of cut flowers. The Department helped growers with trials of postharvest treatments designed to prolong vase life or to make relatively long term storage on the farm possible. Trials were also conducted to establish nutritional standards for a range of ornamental species.

At Gosford, the evaluation of pesticides for the control of two-spotted mites and mealybugs, both serious nursery problems, continued.

HORTICULTURE, POSTHARVEST

Postharvest Handling and Marketing of Horticultural Produce

The local value of horticultural products grown in New South Wales is some $330 million. By the time the produce has reached the consumer's table the value is about $1000 million. However, considerable losses occur along the marketing chain due to disease and poor handling.

The postharvest research and advisory program has been successful in communicating to the marketing chain the new technology which prevents quality deterioration and wastage. New cool rooms have been installed at grower and commercial level and many existing cool rooms have been fitted with forced air equipment which allows much faster and more efficient cooling.

Five new Agfacts and two posters concerned with postharvest matters have been used successfully in postharvest programs throughout the year.

To prevent chilling injury and retain quality it is important to store at the correct

CONSERVATION FARMING

Concern about the general widespread physical and chemical degradation of New South Wales soils has led to the Department of Agriculture preparing a major program on conservation farming.

Traditional farming practices have contributed to this degradation, the main symptoms of which are:

- low chemical fertility (low organic matter levels)
- poor physical fertility
  - — compaction
  - — surface crusting
  - — poor drainage
- soil erosion
- acidity (pH levels below 5).

Conservation farming can be defined as those practices that will preserve our resources (soil, water, trees etc) while sustaining viable agricultural production. It incorporates several important principles:

- retention of crop residue
- minimising cultivation
- crop rotations
- judicious livestock management
- establishment and regeneration of native trees and shrubs.

The overall conservation farming program will comprise programs on conservation tillage, trees on farms, soil acidity and salinity.

It will be officially launched by the Minister in early September 1985 and will be conducted on two distinct but complementary levels.

The first will be the community awareness level. The aim will be to establish with the general community that the adoption of a conservation ethic is essential for sustainable agricultural production and therefore the welfare of all Australians. A wide range of promotional and mass media material has been prepared for this aspect of the program.

The second level is farmer adoption, where the aim is to have farmers adopt conservation farming practices. The Department will rely heavily on on-farm trials and demonstrations, field days, seminars and technical publications, supplemented by mass media and promotional materials.

IRRIGATION

Production and Trends

Water will become a scarcer and more valuable resource in the future. There will, therefore, be a need for the upgrading of the legal and administrative framework for water so that orderly expansion of industry can occur.

The low productivity of irrigated agriculture is expected to change in the near future, although the rate of increase in productivity will depend on a number of factors such as the price of water, the allocation policy for water, the policy for control of land tenure, and changes to water law.

It is estimated that in the next five years an increase of 11 per cent in irrigated production (about $90 million annually) may be possible.

Water Resources Available

In the past century water resources available for use have approximately doubled every fifteen years. Although it is physically possible to again double the water available in New South Wales, investing public funds to achieve this is hard to justify. Further major water supply projects frequently have unacceptable environmental consequences, may not give an adequate return to invested capital, and are costly of public funds.

It appears, therefore, that there will be a decrease in the rate of expansion of water supply. Water, rather than land, is becoming the constraint to production from irrigated agriculture.

Efficiency of Water Use by Irrigated Agriculture

On average, irrigated agriculture uses about 7200 GL of water annually. If irrigated production is valued at $800 million annually, gross production is estimated to be about $100 per megalitre, which is similar to Queensland and Victoria.

Comparison of New South Wales irrigation efficiency with irrigated production in other semi-arid areas is difficult. However, South Africa is estimated to produce about 20 per cent more value per megalitre of irrigation water used, and Israel several times more. Californian agriculture also appears to be more water efficient than New South Wales.

Average irrigated yields in New South Wales appear to be low compared to the potential of the crops and pastures. Typically less than half the potential yield is achieved on average. Similar observations have been made in Victoria by the Public Bodies Review Committee in recommending major changes to the structure of the water industry.

Advisory Services

The Department has five specialist irrigation technologists providing support to over 80 advisory staff who deal with irrigators on a regular basis. The five specialists have soil science, agronomy, horticulture and engineering backgrounds and give multi-disciplinary whole-farm advice.

The Department is involved jointly with the CSIRO in two ventures to increase the efficiency of irrigation production. They are SIRAGCROP, a scheme operating experimentally in the south of the State and SIRATAC, a scheme to increase the yield of cotton production in the north of the State.

Research

There are about 40 researchers whose programs are oriented predominantly towards soil moisture and irrigated crops.

Education

The Department has an irrigation unit attached to the Murrumbidgee College of Agriculture, Yanco. The unit has three professional staff, who operate multi-disciplinary courses for irrigators and farm hands and in-service training courses for Departmental staff.

Major Developments During 1984-85

A major program on Salinity and Irrigation Efficiency began, its aim being to promote a greater awareness of the need for wise on-farm water use.

The program is intended to be applicable to all irrigators in the State, since all irrigators must be aware of the need to make best use of limited water resources. Land salinisation through irrigation is a problem only in the Murray Valley, with some early indications in the Murrumbidgee Valley.

Production Loss

A project was begun to evaluate the production loss occurring through land salinisation and waterlogging. Although salinisation of irrigated land is potentially a serious problem, early indications are that waterlogging results in greater losses of production at present. It is estimated that up to 25 per cent of pasture production may be lost through waterlogging in some areas of the Murray Valley. A project to evaluate the advantages of sprinkler irrigation in avoiding waterlogging began in the Jerilderie area.

Management Policies

The Department assisted in the development of comprehensive water management policies through the State Water Plan and the Water Management Audit and several other enquiries into the management of water resources.

SEEDS INDUSTRY

Production and Trends

See Tables 1-3 page 15.

Conditions in 1984-85 generally favoured seed production, resulting in satisfactory crops of many herbage cultivars. Registered cereal seed yields increased markedly over those of previous years and quality of both pasture and cereal seed was sound. The production of grain legume seed was better than in previous years but still inadequate to meet the demand of the industry. This was especially so with the summer grain legumes — mung beans, cowpeas, and adzuki beans — and steps were taken to initiate a coordinated industry/Department approach to seed production in these crops.

Soybean and rapeseed production is coordinated by consultative groups consisting of representatives of seed producers, the seed industry and the Department, and both production and quality have been satisfactorily adjusted to the market.

Hybrid maize quality was poor. Carry-over stocks deteriorated due to the high storage humidity and problems were detected in genetic purity.Winter rain on the coast has delayed the harvest of much GH maize seed and further problems due to weather damage are anticipated. The need for improved production methodology, quality control and postharvest management is indicated, especially in the areas of seed drying, packing and storage. The necessary changes to the certification rules and production systems are currently being implemented.

The insect pest pea weevil was detected in a certified field pea crop for the first time this season and certification procedures have been modified to ensure the cleanliness of certified seed.

Pasture seed yields were adequate, but the existence of carryover stocks coupled with a general reticence by farmers to buy herbage seed resulted in reduced prices. The seed industry within the State has responded to this situation by forming a seed marketing cooperative which commences trading in the spring of 1985. Subterranean clover stocks are high and represent a special challenge to the management of the cooperative.

The Kangaroo Valley Ryegrass Seedgrowers' Co-operative reported increased yields in comparison with previous recent years. In 1984-85 they produced 110 tonnes of seed, and over 200 tonnes can be expected in 1985-86. The cooperative opened a new cleaning plant in early 1985.

Imports of herbage seed remain high, especially from New Zealand. New South Wales seedgrowers could make inroads into this area of the market, however, given proper organisation and a suitable range of cultivars. Kangaroo Valley ryegrass could take back up to 500 tonnes of this market given a different production and pricing policy. The Seeds and Marketing sections of this Department are currently investigating ways of achieving this goal.

New Cultivars

The following cultivars were grown for commercial certified seed production for the first time in New South Wales this year:

Medicago polymorpha (burr medic) cv Serena (ex Western Australia)

Pennisetum clandestinum (kikuyu grass) cv Noonan

Brassica rapa (oilseed rape) cv Bunyip

Glycine max (Soybean) cv Suttor, Reynolds, Farrer

Trifolium subterranean (sub clover) cv Karridale (ex Western Australia)

Setaria anceps (setaria) cv Solander (ex CSIRO Queensland)
Medicago sativa (lucerne) cv Sequel (ex CSIRO/Division of Plant Industries Queensland); plus several proprietary cultivars
Zea mays (hybrid maize) — GH 5009.

The following cultivars will be planted for the first time next year:
Eragrostis curvula (lovegrass) cv Consol (ex Soil Conservation Service)
Paspalum notatum (Bahia grass) cv Competidor
Festuca arundinacea (tall fescue) cv Epic (ex Wright Stephenson Pty. Ltd.)
Unless otherwise noted, the cultivars originated from this Department's programs.

Pre-release seed increases have proceeded with the following:
Cicer arietinum (chickpea) lines 60531, 772431.
Medicago sativa (lucerne) Yanco line FPX.
The two old maize hybrids GH 390 and GH 128 will not be certified in future years.

Table 1. Certified Pasture Seed Production in New South Wales

	(Tonnes)					
	73-74	78-79	81-82	82-83	83-84	84-85
Subterranean clover	1066	1191	303	34	609	396
Annual medics	41	23	–	–	–	1
Lucerne	275	63	192	139	64	142
Other clovers	1	56	66	104	99	128
Temperate grasses	187	442	5	57	335	241
Tropical grasses	–	–	3	1	13	24
Total	1570	1775	569	335	1120	932

Table 2. Registered Cereal Seed Production in New South Wales

	(Tonnes)				
	80-81	81-82	82-83	83-84	84-85
Wheat	5517	5222	4748	8433	N/a
Oats	976	804	760	601	N/a
Barley	811	1200	748	1083	N/a
Cereal Rye	–	1	–	–	N/a
Triticale	–	167	85	238	N/a

Table 3. Certified Seed Production of Grain Legume, Oilseed and Hybrid Maize Crops

	(Tonnes)				
	80-81	81-82	82-83	83-84	84-85
Lupins	144	123	21	219	343
Adzuki beans	2	5	–	–	–
Chickpeas	18	40	–	*	1.15
Mungbeans	17	–	12	*	17.5
Soybeans	15	8	31	*	14
Oilseed rape	–	44	31	11	251
GH Maize	15	90	162	60	17†

* Quantities of seed of each of these types produced but due to the late season, certification was incomplete by 1.7.84.
† Reflects late harvest in 1985 - anticipated production approximately 150 tonnes.

WEEDS

Noxious Plants

An amended list of noxious plants was gazetted on 8th March 1985. African boxthorn, dodder and silverleaf nightshade were added to the statewide list making a total of 24 weeds now declared for the whole State. The others are alligator weed, salvinia, water hyacinth, waterlettuce, lagarosiphon, Bathurst, Noogoora, Californian and cockle burr, blackberry, coca leaf, Johnson grass, Columbus grass, Indian hemp, mesquite, nodding thistle, opium poppy, parthenium weed, serrated tussock, spiny burr grass and St. John's wort. A further 53 plants are declared in various parts of the State.

Mycoherbicides

A cooperative project has been established between the Department of Plant Pathology at the University of Arkansas, Fayetteville and the Agricultural Research and Veterinary Centre, Orange to examine mycoherbicides for *Xanthium* species.

A fungus (*Colletotrichum xanthii*) which causes a seedling blight and stem anthracnose of Bathurst burr is found in some areas of New South Wales, especially after wet summers. This disease can cause death of individual plants and has the potential to be used on a large scale for control of Xanthium species. Isolates of the disease are currently being tested on a range of *Xanthium* species at Fayetteville and Orange. Methods of infection and environmental factors that improve efficiency are being studied.

3rd Biennial Noxious Plant Conference

The 3rd Biennial Noxious Plant Conference run by the Department of Agriculture and Noxious Plants Advisory Committee was held at the Australian National University, Canberra from 6th to 10th May 1985. Over 180 delegates including councillors, senior staff and weeds officers from councils, officers from Commonwealth and State Government Departments, CSIRO and private industry attended. The main theme of the Conference was the use of integrated weed control systems for the future, featuring the use of alternative methods to herbicides for management of noxious plants.

Biological Control of Weeds

Promising results have been obtained with the tip-gall fly, *Rhopaloymia californica*, on groundsel bush. The moths were released at 11 sites on the north coast in November 1983 and had moved over 10 km at several sites by May 1985. Flowering of groundsel bush is estimated to have been reduced by 75-80 per cent. Monitoring is continuing but arrangements are now being made to spread the gall fly widely in the infested areas of groundsel bush.

The salvinia weevil, *Crytobagous* sp., has established at all release sites. These weevils were only released in October 1984 and so far look very promising. The salvinia moth, *Samea multiplicalis*, was also observed damaging salvinia at Cobaki, near Murwillumbah. This moth is moving down the coast from Queensland naturally, and is expected to supplement the damage by the weevil. Releases of the moth have been made by CSIRO in the Sydney area. At two sites over 95 per cent damage of growing points has been recorded.

Epiblema strenuana (gall moth) and *Zygogramma* sp. (leaf eating beetle) have been released on ragweed at 20 sites on the north coast. The insects have established but were only released in December 1984. Damage was evident but numbers need to build up before any conclusive results are evident.

The blackberry rust (*Phragmidium violaceum*) which was first recorded in April 1984 at Walcha, has now been found at Nundle, Tumbarumba and Bombala. Its effectiveness in controlling blackberries under New South Wales conditions is not yet known.

Biological control of water hyacinth continues to improve as the *Neochtina* weevils build up. Control is evident as far south as Kempsey. Releases made further south have not been effective.

Parthenium Weed

Because of dry conditions in the north west of the State this year there were few reports of parthenium weed. Ordinance 50 under the Local Government Act was amended to allow for:

(a) inspection of prescribed agricultural machines at the Queensland/New South Wales border (for parthenium weed) and the issuing of permits for entry to New South Wales if the machines are clean.

(b) inspection of prescribed agricultural machines within New South Wales and the power to direct treatment of those machines if parthenium weed is present.

Two prosecutions have proceeded against persons entering New South Wales without a permit.

Tolerance of Cereals to Herbicides

Research at the Agricultural Research Institute at Wagga Wagga has shown that crop yields can be reduced when recommended rates of some herbicides are used. The amount of such losses has been found to depend on specific herbicide/cultivar combinations and seasonal conditions. Charts of cultivar-herbicide reactions are now included in the departmental publication 'Weed Control in Winter Crops'.

SHEEP

Production and Trends

Twenty-six thousand producers now have 55 million sheep, the largest flock since 1972. There is continuing optimism regarding the immediate future for wool growing enterprises but doubts remain regarding the outlook for the State's lamb and mutton industries. Although the profitability of the New South Wales sheep industry continues to decline in real terms, the effects of input cost increases have not been as severe as for other, more fuel dependent, enterprises.

In 1984-85 over 8 million sheep and lambs were slaughtered, producing 146.9 kt meat. Wool production totalled 263.5 kt.

A serious dilemma is facing the New South Wales lamb industry. Surveys show that most consumers prefer cuts of lamb carcases leaner than the bulk of those now produced. However, any per kilogram premium for leaner lambs continues to be insufficient to offset the higher per head prices received for heavier and hence fatter lambs. In other words, producers are not receiving clear price signals via saleyard auctions. As this is a major problem facing the lamb industry, the Department has placed a high priority on implementing programs to reverse this situation.

Genetic Improvement of Wool Production

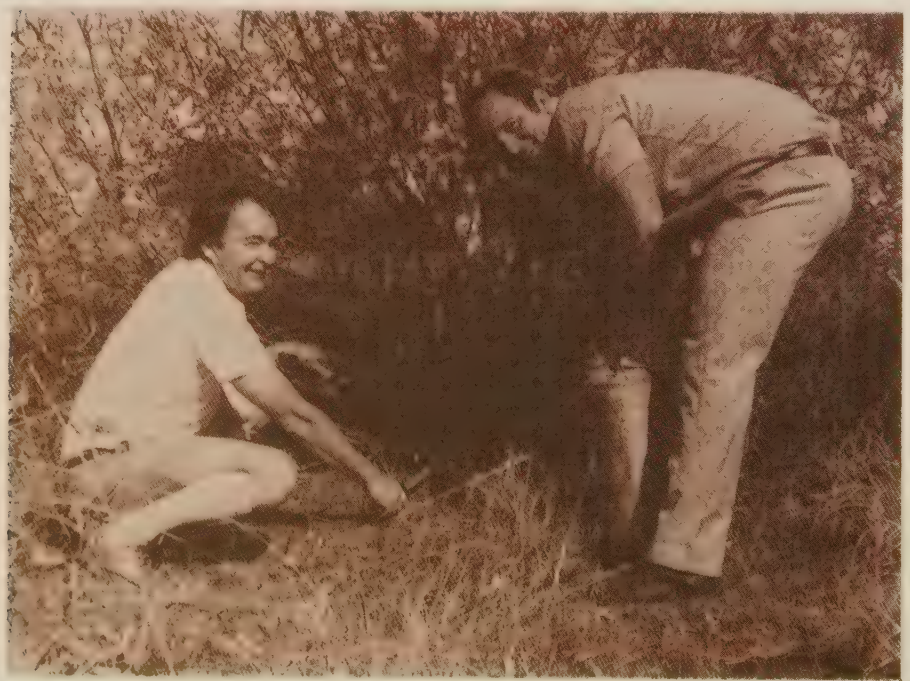
Excellent progress continues to be made on major statewide programs to increase the adoption and use of modern breeding techniques by the sheep industry. The Trangie Fleece Measurement Service is now measuring 40 000 rams annually from 158 properties — a significant rise on the 34 785 rams tested from 128 studs in 1982-83 when a charge was first introduced. Further to this, the number of samples tested in the first four months of 1985 doubled that of the same period for the previous year. This represents approximately 46 per cent of the rams sold annually in New South Wales and includes most of the studs with the greatest genetic impact on the industry. Forty-four studs are now holding annual on-property production sales of rams with greasy fleece weight and fibre diameter information displayed for prospective buyers, representing a major increase on previous years. These sales rely on the availability of the Trangie service and would not have been implemented in its absence.

This fleece measurement service has had a major impact on the New South Wales stud sheep industry. Without it, few of the significant recent reforms in production testing and ram selling methods would have occurred. Despite these achievements, much still needs to be done to ensure that fleece measurement is put to profitable use.

Wool Quality

A major new statewide program was initiated in May 1985 in cooperation with the Australian Wool Corporation, the New South Wales and Victorian Associations of Wool Selling Brokers, the New South Wales Livestock and Grain Producers' Association and the Department of Technical and Further Education. The aim of this project is to inform wool growers of the marketing and husbandry advantages of the use of measurements to assess tensile strength, staple length and colour within sale clips. These techniques, recently developed by the CSIRO, are still in the early stages of adoption by sheep producers. However, it is evident at this early stage that they offer considerable benefits. The major thrust of this campaign is the organising of a large number of small, practical field days and demonstrations in New South Wales shearing sheds. Apart from explaining the use of the new measurements, these field days are also providing an opportunity to remind growers of the importance of modern clip preparation methods, especially in the area of clip contamination. Over 54 field days have been organised in the first eight weeks of the campaign.

The spread of mesquite, initially used in mine reclamation work at Broken Hill, threatens low rainfall rangeland areas.



The Trangie Fleece Measurement Service now covers about 46 per cent of rams sold in the State. Measurements of greasy fleece weight and fibre diameter are displayed to assist buyers in visual assessment of an animal.

Meat Sheep Testing Service
Through the operation of the Meat Sheep Testing Service based at Cowra Agricultural Research Station, a research project aims to evaluate growth rate and fat depth as criteria in the selection of terminal meat sheep sires and to assess the operational feasibility of a service providing these measurements. An associated statewide advisory program aims to foster the use by the industry of the measurements provided by the Meat Sheep Testing Service.

Sheep Nutrition
A number of district and regional programs devised to improve sheep productivity on pasture have been implemented. Such programs include the management of natural pastures on the northern tablelands and slopes, the improvement of natural pastures through the use of subterranean clover and superphosphate on the central western slopes, the 'supersense' pasture program of the central tablelands, and the role of lucerne on the south western slopes. The adoption of the Victorian 'Sheepo' model, the validation of the CSIRO GRAZPLAN model and a series of workshops to train advisory officers in their use will greatly improve the effectiveness of our service in the area of pasture utilisation.

Sheep Reproduction
An inter-regional program on sheep reproduction provided technical and extension aid material to assist district advisors in their day-to-day advisory functions. A 'Sheep Reproduction Calendar', which integrated genetics, nutrition, health and management to a monthly order of activities, was produced and sold 700 copies.

Genetic Research: Wool
Crossing Experiment. Although bloodline crossing and ewe strain crossing amongst commercial Merino flocks are widely practised, there is a lack of experimental evidence as to their value. For this reason, a large scale crossing experiment was set up in 1984 using sheep from one of the Trangie flocks. Eight Merino lines were incorporated into a crossbreeding comparison, with ewes from each line being mated with rams from each line. The eight lines chosen represented two fine wool lines, two medium non-peppin lines, three medium peppin lines and one strong wool line.

The first lambs were born in spring, 1984. Preliminary results indicated the presence of significant heterosis among Merino blood lines for lamb survival (20 per cent) and birth weight (5.6 per cent). For lamb survival, multiple birth lambs showed 24 per cent heterosis as compared with 17 per cent for single birth lambs. Future results will indicate whether this extremely favourable increase in lamb survival is manifest in all bloodline crosses or principally from between-strain crosses.
Correlation Between Ovulation Rate and Litter Size. An experiment nearing completion is an assessment of ovulation rate as an alternative selection criterion for improving litter size in Merino sheep. As expected, mean ovulation rate and litter size increase with age. For the sheep in this study, the heritability estimates for both ovulation rate and litter size are low (about 0.07) and not significantly different from each other. However, if the genetic correlation between ovulation rate and litter size is found to be close to unity, accuracy of measurement remains an important advantage favouring ovulation rate as a selection criterion. This, combined with its other advantages (lack of dependence on the male for expression of ovulation rate, the ability to take several measurements in one year, and the opportunities for reducing the generation interval), means that ovulation rate could still be a more efficient selection criterion than direct selection for improving litter size in the Merino.

Fleece Rot and Fly Strike. An investigation into the genetic basis of resistance/susceptibility to fleece rot and fly strike in Merino sheep has produced encouraging results. There is a substantial genetic component with the heritability for liability to fleece rot being between 30 and 40 per cent. Merino flocks, where replacement breeding animals are selected on the presence or absence of fleece rot and body strike, have been established and are being monitored for response to selection. A demonstrated response to selection was evident in the lines, in that resistant line weaners showed 3 per cent body strike and susceptible line weaners showed 16 per cent body strike after a fly wave during the year.

Genetic Research: Meat
In recent years there has been a general trend towards the production of a leaner carcase both for domestic and export markets. A leaner carcase can be achieved by either breeding for leaner lambs and/or implementing short term management practices to reduce fatness in the body. As a means of determining if leanness has a genetic component, groups of lambs sampled from lines selected for either high or low weaning weight were slaughtered at various intervals between birth and maturity and assessed for degree of fatness. Although there were large differences between rams and ewes, the strain had little effect on the partitioning of dissectible and chemical fat depths.

A prolific dam breed, suited to intensive prime lamb production, is being developed by the Department from Booroola Merino x Dorset and Trangie Fertility Merino x Dorset ewes and lambs. This breed, called the 'Hyfer', will provide higher production and greater flexibility under good management and feed conditions than the Border Leicester x Merino. The first

group of 175 unselected second cross ewes has completed a two-year test mating phase under an eight-monthly lambing regime. The results achieved (2.02 lambs born per ewe joined per year) are extremely encouraging, and demonstrate the potential of Hyfer ewes in an accelerated lambing system.

Research: Nutrition

A major investigation into the nutritional management of breeding flocks of Merino sheep for wool production is in its final stages. This investigation, which involved a series of 11 experiments, has led to the following conclusions:

- The net efficiency of conversion of food into wool (that is, efficiency at zero change in maternal mass) is reduced during pregnancy and lactation.
- This lowered efficiency is associated with a diminished responsiveness of wool growth to environmental conditions, through either dietary or hormonal manipulations.
- Despite some early promising results with the sulphur-containing amino acids, it does not seem that supplementation of well nourished ewes with by-pass protein will improve either the quantity or quality of wool produced by their offspring.
- The nutritional management of the breeding ewe flock should be directed towards providing adequate nourishment for the ewes, with the primary aim of minimising mortality in ewes and producing healthy, viable lambs. If these goals are achieved through management, the wool clip from the breeding ewe flock will suffer little in terms of either quantity or quality. Quality here refers specifically to wool soundness. This conclusion may have to be modified as data become available from objective measurement of strength of staple produced by breeding ewes.
- Biologically, there is still no adequate physiological explanation for the decreased wool production of pregnant and lactating ewes.

Sheep Health

Ovine Brucellosis. The ovine brucellosis eradication scheme now has over 900 accredited flocks. This includes 40% of the Merino studs which sell over 75% of the Merino rams sold in New South Wales. The accreditation scheme means that graziers are now able to buy rams from studs with a guarantee that they are free from the disease.

Footrot. The footrot control program continued throughout the year and graziers are now more aware of control programs available for their properties. Increased saleyard inspection and detention of infected mobs have resulted in a reduction of 50% in the number of footrot cases detected in saleyards in the southern areas. Cooperation has been obtained from agents and owners in this activity. The New England protected area had 33 properties in quarantine for footrot on the 30th of June 1985. The number of properties quarantined increased to 40 during the year due to the increased number of introductions into the area following the drought and a favourable season. At the end of the year, 19 properties remained in quarantine.

Wormkill. 'Wormkill' is a strategic drenching program for internal parasites in sheep developed by CSIRO for the Northern Tablelands. It was heavily promoted by veterinary and advisory staff and Pastures Protection Boards. Over 1000 producers attended Wormkill field days, and advisory material was mailed to all sheep producers on the Tablelands.

The Wormkill program has been adopted by over 90% of graziers in some areas in the Northern Tablelands. Surveys indicate that graziers who have adopted the program are saving approximately $1 per breeding ewe on drench. Other major savings, such as less frequent mustering, have also resulted. Total savings are estimated at $1.8 million. Progress on the program is continuously monitored to ensure effectiveness, and to check for any further developments in anthelmintic resistance.

BEEF CATTLE

Production and Trends

Beef production during the year was 266 kt, from 35 000 producers. Stock prices maintained favourable levels, encouraging producers to begin herd rebuilding. Preliminary estimates of returns at 31st March 1985 show the New South Wales beef herd had increased by 7.7 per cent to 4.92 million head during the past year. Depressed returns in the wheat and prime lamb industries favour this rebuilding trend.

Rising costs of production are causing concern amongst producers. This trend has hastened the adoption of techniques such as crossbreeding and the use of growth implants which improve productivity. Further acceptance of sale by description methods was a notable development.

Advisory

The Department continued to conduct courses for producers, agents and buyers to develop the skills needed to describe stock for sale objectively by description marketing systems. Fifteen such courses were conducted for 273 participants. Shorter, half-day courses were also conducted for producers in many areas of the State.

To assist beef producers in identifying ways of improving the production and financial efficiency of their enterprises, an innovative advisory program was developed and implemented. Known as 'Beef-N-Omics', this statewide program consists of a series of two-day computer and discussion based workshop packages. Eighty producers attended 13 workshops conducted during its first six months of operation. A further 150 are on the waiting list and over 3000 are expected to attend over the next three to four years.

Interest in crossbreeding as a means of improving herd productivity continued during the year. The Department conducted field days, organised bus tours to view crossbreeding programs, and provided advice to those embarking on these programs.

'Breedplan' was launched in May 1985, providing beef producers with a potentially useful option in herd performance recording. This will encourage more cattle breeders to use the National Beef Recording Scheme, leading to more rapid genetic progress throughout the beef industry.

Research

A major beef cattle crossbreeding project is comparing the performance of the progeny of Hereford (H) bulls from matings with Hereford, Simmental (S), Friesian (F) or Brahman (B) cows.

The progeny were raised to weaning on their dams on three pasture types classified as being of high, medium or low nutritive value. The steer progeny were slaughtered at weaning or grown out and fattened, whilst the female progeny were grown out and kept for breeding. First cross cows raised heavier calves than Hereford cows on all pasture types, the gain from crossbreeding increasing as the nutritive environment deteriorated. However, the best breed type varied depending upon the quality of the pasture grazed.

A radio identification collar, part of the Automatic Feeding System developed at the Agricultural Research Centre, Trangie.

Pasture Quality	*Cross*	*Weight Gain Over H(%)*
High	FxH and SxH	27
Medium	BxH and SxH	18
Low	BxH	88

The substantial advantage of the BxH cross under poor nutritional conditions is clear. It was concluded that on both medium and low quality pastures, crossbreeding using first-cross B x H cows is a profitable option.

Pasture Quality and Animal Production

It is known that large increases in beef production are obtained from native pastures growing on an infertile sandy soil when it is fertilised with superphosphate and oversown with white clover. An experiment was conducted to determine whether further gains in pasture quality and animal production can be obtained by the sowing of improved grasses or an additional legume. Established white clover pastures were sown with Kenya clover, Bahia grass or *Digitaria swazilandensis*.

It was found that in the third and fourth years steer liveweight gain from pastures with either Kenya clover or *Digitaria* grass were greater than those from the white clover base pastures.

Cattle Tick Outbreak

The finding of a single engorged tick on a beast at the Grafton abattoir led to the detection of two tick-infested properties at Coombadjha. Cattle on a total of 68 properties in the surrounding area were inspected, but no further cattle ticks were detected. An eradication program was formulated to control the outbreak, including quarantine of the infected and adjoining holdings, and quarantine of the Grafton saleyards and abattoir. Treatment of the cattle on the infested properties was instituted. Dipping facilities were in a poor state of repair in this area (it was released from the Tick Quarantine Area in 1977) and complete musters at three-weekly intervals were difficult to achieve. A special permit was obtained to use pour-on chemicals in the eradication program. These treatments are applied at five-weekly intervals, resulting in considerable savings to the stockowners.

Brucellosis Eradication Campaign

The third round of testing is well advanced in all areas of the State. It is due to be completed by June 1986.

The prevalence of brucellosis was reduced in 1984-85 as shown below:

In 1984-85 field testing of 1 329 090 cattle involved 24 000 property visits and the testing of 18 500 herds. Intensive investigations into all possible herd breakdowns continued, with the number of breakdowns steadily decreasing. The ELISA test for bovine brucellosis was incorporated into the testing regime for all samples and the Rose Bengal test was deleted as the screening test. Monitoring to detect infected herds included the testing of 340 000 blood samples collected at abattoirs, and over 28 000 milk samples from dairy herds. The abattoir and dairy factory monitoring schemes adequately assessed 24.1% of the State's herds.

Brucellosis prevalence in New South Wales 1977-84*

Date	1977	1978	1979	1980	1981	1982	1983	1984	1985
Herd prevalence (%)	29.5	10.1	9.75	4.78	1.31	0.49	0.23	0.18	0.16
Cattle prevalence (%)	3.1	1.3	0.21	0.17	0.66	0.03	0.01	0.01	0.01
Number of known infected herds	8983	6949	3446	2081	644	262	125	98	87

* Australian National Disease Information System (ANDIS)

The quality of dairy herds continues to improve with the use of Australian Breeding Values and participation in the Dairy Herd Improvement Program.

DAIRY CATTLE

Production and Trends

Total milk production in New South Wales for the year was 939 million litres produced by 275 000 cows held by 2838 registered farmers. This compares with 941 million litres produced by 2987 farms during 1983-84.

The Australian dairy industry has been seriously affected by falling export prices and by uncertainty regarding future milk marketing arrangements in Australia.

Increased production of short shelf life dairy products has given higher returns to New South Wales farmers for manufactured products than those obtained by Victorian dairy farmers.

The New South Wales Dairy Industry Conference became fully operational during the year and will provide an effective mechanism for industry policy making in future years.

A significant development was the rationalisation of the metropolitan vendor system of milk delivery to supermarkets. With 93 per cent of the supermarket trade rationalised there are now 64 vendors servicing about 500 supermarkets. The approximate breakdown of trade by volume is 50 per cent home delivery, 30 per cent small shops and 20 per cent supermarkets.

Two dairy factory cooperatives merged. The most significant was between the Gloucester-Wingham and Taree factories; 350 farmers now supply one factory.

There has been a continuing increase in the number of dairy farmers participating in the Dairy Herd Improvement Program (DHIP). Approximately 88 000 cows were herd recorded during the year in nearly 1000 herds. Forty six per cent of identified

heifer calves born in these herds were bred by A.B. Increased participation by farmers is attributed to the effectiveness of the Department's inter-regional advisory program for DHIP, the need for farmers to become more cost efficient in the use of their resources, and the impetus caused by the release of Australian Breeding Values (ABVs) for bulls and cows in all states. The release of ABVs for cows was unique in that it was the first time anywhere in the world that cows have been ranked in order of breeding value.

Advisory

The transfer of responsibility for on-farm milk quality supervision to the Dairy Corporation led to 18 Livestock Officers (Dairying) being transferred to the New South Wales Dairy Corporation. Three of these were appointed to senior positions. The number of officers providing advisory and associated services to dairy farmers has been reduced from 38 to 22.

Research

An experiment was carried out to examine the effects of minerals and sodium bentonite as additives for molasses. Barley grain was also compared with molasses as a supplement for milking cows.

The inclusion of minerals in the molasses gave a significant increase in milk production of one kilogram per day, while the addition of bentonite did not result in any significant response either on its own or when fed with minerals. Cows were also checked for faecal consistency; it was found that adding bentonite to molasses did not reduce the incidence of scouring.

When barley and molasses were fed on an equal dry weight basis (3.5 kg molasses versus 2.6 kg barley) the cows produced similar quantities of milk. The cows fed molasses tended to gain less weight than cows fed barley but this difference was not statistically significant. The barley supplement and all of the molasses supplements significantly reduced the fat content of milk by an average of 0.28 percentage units. None of the supplements changed the protein content of milk significantly. This may be attributable to the fact that the ryegrass/clover pastures being grazed during the experiment were of a high quality and additional energy supplementation was not required for optimal protein content of the milk.

Tuberculosis Eradication Campaign

Check testing of all dairy herds in the State has been completed. Of the 3000 dairy herds in New South Wales, only two herds were found to be infected — a very low level of infection in a dairy population which had been traditionally heavily infected with TB. By the end of the year there were only two herds classified as infected in New South Wales. Both the herd and individual cattle prevalence were lower than in previous years, in fact, the lowest they have ever been. This indicates that New South Wales is well on the way to complete eradication of TB.

GOATS

Production and Trends

Dairy Goats. New South Wales produced approximately 1.4 million litres of milk from 173 producers ranging from large holdings to backyard operations. Most of this milk was used by the producers to rear calves or kids. However, approximately 440 000 litres of milk for human consumption was sold by about 100 of these producers.

The need to provide more information to goat producers on improved methods of production combined with the lack of any formal industry structure have restricted the economic development of on-farm production. This in turn has led to a product that is highly priced, particularly by metropolitan producers. Country producers are generally more cost efficient due to lower feed costs but lack the nearby market of city based producers.

Deficiencies in the present fragmented nature of the industry were highlighted at a Marketing Workshop organised by the Goats Milk Study Group. The main recommendation from the Workshop is to convene a meeting (September 1985) of producers, distributors, processors and manufacturers with the objective of forming a representative organisation for the dairy goat industry.

Non-dairy Goats. It is estimated that New South Wales has 185 000 goats distributed over 1850 flocks. This represents 49 per cent of Australian goats and 41 per cent of Australian goat flocks. As a substantial proportion of New South Wales goats are slaughtered and exported through interstate ports, it is not possible to obtain a reliable estimate of the value of the goat industry to this State.

Exports of meat and live goats for slaughter have declined. The feral goat population has recovered from the combined effects of drought and harvesting pressure of the early 1980s. Slaughter capacity for goats has declined with the closure of one of the main abattoirs. Numbers of feral goats being captured have increased over the previous year. Most females are being sold to graziers for domestication, use in weed control, and breeding with cashmere bucks. The majority, probably over 90 per cent, of feral goats that are being slaughtered are bucks.

Goat numbers continued to increase as did the number of flocks and the average flock size. The most rapid growth was in the domestication of feral goats for pasture/rangeland management. Most of these have the secondary aim of cashmere production.

Mohair production continued to increase as more animals were retained, selection and management increasing production per head. The main growth areas were the slopes and tablelands, where fibre may be produced free, or nearly free, of vegetable fault. Few Angora bucks have been mated to foundation does in the last two to three years; the majority of foundation and poorer first cross does were slaughtered during the drought of 1981-83. The improvement in mohair quality continued with less medullated fibre and better style and character.

Meat production has mainly been from feral goats that were slaughtered for export. Since 1984, there have been at least two operators wholesaling goat meat into the Sydney metropolitan area. It is believed that most of this trade is from young domesticated goats. Domestic market potential is excellent, as many of our population have come from countries in which goat meat is commonly available and is preferred. The domestic trade will probably require young (less than four tooth), well finished goat meat for the butchering trade, while small goods will tend to use older and leaner types. The export trade will continue to take our present product (very lean feral type goat carcases), while a new trade will have to be developed for the increasing amount of fatter domesticated meat.

Skins continue to be a problem in that they do not receive their potential value. This is due to a combination of problems including poor removal, no grading/sorting and poor post-slaughter handling. Some goat skins have potentially high value, particularly as improved management should result in reduced damage by lice or bruising.

Advisory

Dairy Goats. The recently appointed Livestock Officer (Dairy Goats) has prepared new advisory material on a range of subjects. These include the design of milking sheds, the preparation of advisory programs on out-of-season breeding, kid raising, improved nutrition, and improved herd and farm management.

Non-dairy Goats. The Department's advisory program has three main components. These are the use of goats (including Angoras) for pasture management; the improved marketing of goat products, including meat and mohair; and improving the efficiency of goat production, including reproduction.

A draft of proposed legislation for goat meat will be considered by relevant meat industry representatives in August 1985. These have been prepared by the Export Inspection Service in cooperation with departmental officers. However, a goat meat industry committee supported by the Angora Mohair Breeders' of Australasia has already used some of this information to develop a goat meat market reporting system. This marketing initiative should assist goat producers in receiving a fair price for their surplus stock.

Research

Non-dairy Goats.- Detailed studies on reproduction in the feral goat are nearing completion. These have highlighted the 'buck effect' of mating and provide a more complete understanding of this phenomenon in goats than was available from Texan Angora research. Heritability estimates from South Australian work must be published before it will be possible to develop a detailed project on the use of objective selection for increased mohair production.

PIGS

Production and Trends

Pig meat production increased during 1984 then decreased during 1985. Overall, production to 31st May 1985 was 1.6 per cent greater than for the preceding year. Returns to producers showed large fluctuations during the year. In July 1984 bacon pigs were selling at $1.70 per kg. By November returns had risen to $2.10 per kg before dropping back to $1.65 in June 1985. Feed prices have remained relatively stable except for the last three months of the fiscal year when grain shortages occurred due to drought conditions in western New South Wales.

As at 31st March 1985 there were 3738 piggeries with a total of 786 000 pigs. Compared with the previous year, the number of piggeries declined by 533 and total pigs kept fell by 13 200.

Advisory

Farm Management Recording Service. The Department's 'Piggy Bank' computerised pig performance monitoring and data bank service is now fully operational. Advisory Officers have direct access to the central computer from most locations. Over 80 pig producers are using this service which provides them with comprehensive and up to date information on herd performance and highlights potential husbandry and managerial problems.

Least Cost Diet Service. Using the Agnet computer, which now has terminals located in most district offices, an extremely successful least cost diet formulation service has been established for pig producers compounding their own diets. Early reports indicate an improved performance by herds using this service.

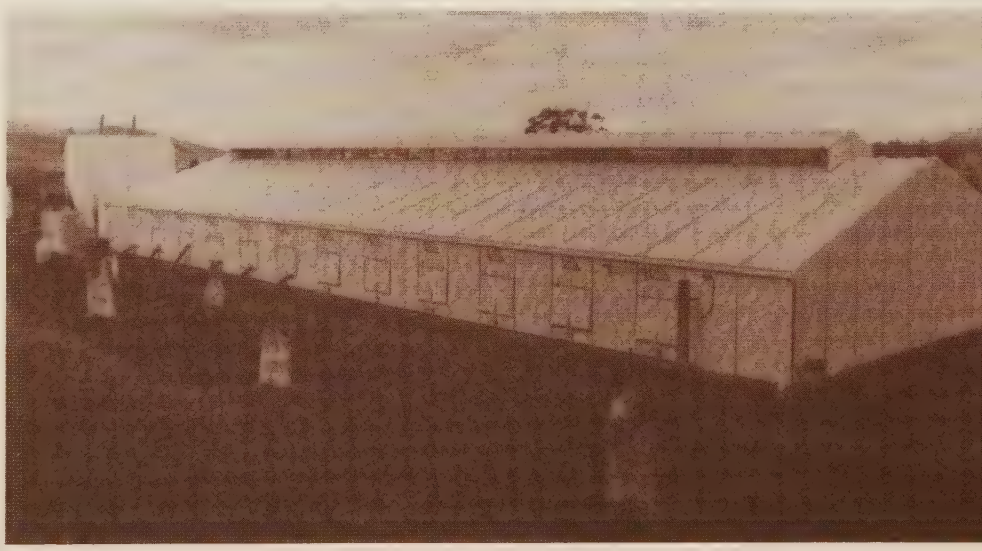
Sale by Description

This form of computerised selling involves agents and buyers operating from video terminals within New South Wales and Queensland. It is used as the price benchmark for all consignment pigs in New South Wales. For the year ended 30th June 1985, 69 646 pigs were sold from a total of 76 200 offered for sale by description — an increase of 41 per cent in pigs offered and 44 per cent in pigs sold by description. An industry survey has recommended that this sale be extended nationally and that the establishment costs involved be financed by a levy of 3.5 cents per pig slaughtered.

Boar Performance Test Station

The Boar Testing Station, located at C.B. Alexander Agricultural College at Paterson, was officially opened on 14th June 1985 with the first intake of 36 boars taking place on the same day. Each boar will be assigned a score based upon economy of production and carcase quality and will also be appraised for physical soundness. The use of above average boars for breeding will both improve the quality and reduce the cost of pig meat, to the mutual advantage of farmers and consumers.

The construction of this station was financed by interest from the New South Wales Swine Compensation Fund. Its operation, however, will be self-financing from the testing fees. The station is controlled by a Management Committee which operates under the auspices of the Department of Agriculture.



The Boar Testing Station, located at C. B. Alexander Agricultural College at Paterson, will assist in improved breeding, raising the quality and reducing the cost of pig meat. Each boar is assessed on economy of production, carcase quality and physical soundness.

Research

The response of growing pigs to dietary lysine as influenced by sex and cereal (barley or wheat) was investigated in an experiment involving 128 pigs. The basal barley-soya bean and wheat-soya bean were offered *ad libitum* from 20-50 kg liveweight. There was no cereal by dietary lysine interaction. Daily gain of females was not increased by dietary lysine concentrations greater than 7.0 g/kg at any liveweight between 20 and 50 kg. Daily gain response for males was curvilinear up to a maximum of 11.8 g dietary lysine/kg for both cereals.

Pig Health Abattoir Monitoring
This scheme is designed to monitor disease of growing pigs at abattoirs, and continues to provide valuable information to producers. Data are collected from 5 abattoirs in New South Wales. Procedures for data gathering at abattoirs were monitored and improved. Reporting facilities to pig producers are being improved as the computer database is expanded. The principal finding has been a relatively high incidence of Enzootic Pneumonia.

POULTRY

Production and Trends
Egg Production. Total egg production in New South Wales during 1984-85 was approximately 74 million dozen, representing about 45 per cent of Australia's eggs. Most of these eggs came from fewer than 500 commercial farms. The efficiency of egg production continued to increase due to improvements in genetics, nutrition, housing, management, health, and welfare. The average performance from 18 to 78 weeks of age for flocks participating in the National Flock Recording Scheme was an egg production of 250 eggs per hen housed, a daily feed intake of 109 g, 38 per cent of eggs 60 g or heavier and 16 per cent mortality.

Although these figures compare favourably with the mean performance of flocks entered in the Department's random sample layer tests, there is a wide range in performance on commercial farms indicating that future improvements can be made. These opportunities for improvement mainly lie in reducing the seasonal variation in feed intake, egg production and egg size; in the more efficient utilisation of feed stuffs; in flock replacement programming; in the better utilisation of hen quotas; and in the improved timing of management decisions. In addition, there are opportunities to improve poultry health by the separation of groups by age; by practising strict hygiene; by vaccination; and by eradicating some respiratory diseases.

Quotas were cut by about five per cent and this, together with conditions of licence restricting the number of birds that could be held to 80 per cent of the quota, helped to reduce further the surplus production. By the end of June 1985 the export surplus had been reduced to about 6.5 million dozen. There has been a high degree of compliance with quota legislation and other policies introduced by the New South Wales Egg Corporation and the Poultry Farmers Licensing Committee.

Quotas have been in strong demand as farmers seek to keep their shedding and equipment operating at full capacity in the face of quota cuts. Quota prices remain high and entry into the industry is difficult.

With a reduction in the surplus and associated levies, the average net price paid to producers and the average retail price of eggs fell during the year. Per capita consumption of eggs and egg products remained constant at approximately 140 eggs.

Meat Production. Total poultry meat production in New South Wales during 1984-85 was approximately 115 million meat chickens with a gross value of about $220 million. This represented about 45 per cent of Australian poultry meat production, with the majority of these chickens being reared on fewer than 500 contract or company farms. Three major companies control about 80 per cent of the total production of chickens, turkeys and ducks.

In 1985, the 'average' broiler flock was marketed between 45 and 50 days of age with a mean liveweight of 2.1 kg and a feed conversion ratio of two kg of feed to each kg of meat produced. The 'average' contract grower produced 200 000 chickens during the year in four to five batches.

The Chicken Meat Industry Act provides a mechanism for negotiation of contracts between chicken growers and processors. A voluntary buy-out scheme to eliminate surplus capacity in combination with an increase in market demand has reduced the pressure on growers with a reduced throughput. Both throughput and profitability of production have improved during the year. With a marketplace trend towards chilled (rather than frozen) chicken, processors have experienced difficulties in producing the required range of carcase sizes on a daily basis. This has led to an increase in the frequency of 'partial pick ups' of broiler chickens which, in turn, militates against the use of more efficient chicken collection methods. The production of turkeys, ducks and game birds increased throughout the year although accurate statistics are not available. There has been considerable interest, but little progress, in commercial goose production.

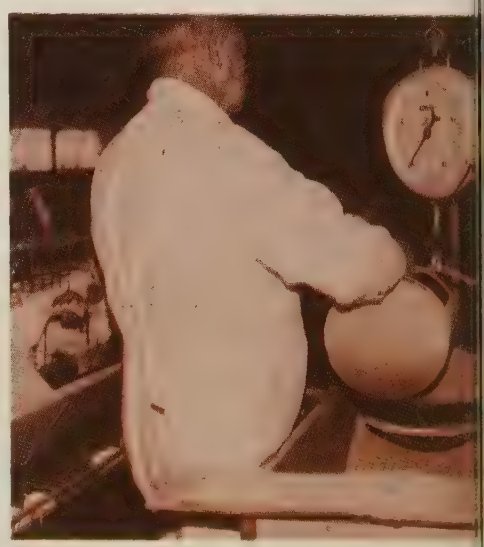
The real retail price of chicken increased to approximately 220 cents per kg with per capita consumption rising ten per cent in the last 12 months to approximately 22 kg.

Advisory
The National Farm Management Recording Scheme and the Random Sample Layer Test continued to provide valuable information as a basis for planning and evaluating advisory programs and marketing strategies in addition to farm management and flock replacement programming. These activities have been supplemented by local Concensus Data Surveys and by providing assistance to farmers with specific farm planning and budgeting problems.

A major program has been developed to improve the seasonal pattern of feed intake, egg production and egg size through improvement to the design and operation of poultry houses and equipment. A similar program in the chicken meat industry is aimed at conserving energy and improving uniformity of growth rate and feed conversion throughout the year.

Another major program seeks to reduce feed costs in the egg industry by formulating and selecting diets on a seasonal basis to take account of variations in daily feed intake and egg mass production; by reducing feed wastage; and by encouraging the adoption of more efficient feeding practices. These three advisory programs are being presented to the industry by means of residential workshops, quarterly newsletters, Agfacts, field trials, field days, meetings, farm visits and other specific activities aimed at encouraging the adoption of recommended practices.

Feed consumption being measured in the Department's Random Sample Layer Test, which provides mean performance figures for New South Wales flocks.



In addition, the Department of Agriculture, New South Wales, was host to a National Workshop for Poultry Advisors, Consultants and Service Personnel which was held at Hawkesbury Agricultural College. The workshop was designed to update the technical knowledge and communication skills of participants, to identify and analyse gaps in the adoption of existing information, and to develop action plans to tackle these problems on a national basis. Two overseas guest speakers attended the National Workshop and undertook a lecture tour of all states. They were Mr Donald Bell, Poultry Extension Specialist, University of California, and Dr Murdo MacLeod, Research Scientist, Poultry Research Centre, Edinburgh.

Exotic Disease Control
An outbreak of virulent avian influenza (fowl plague) was confirmed on a large poultry farm near Bendigo in Victoria. Restrictions were imposed by all States to prevent the introduction of poultry and poultry products from Victoria. All major poultry enterprises in southern New South Wales were kept under surveillance. Blood testing of a representative portion of these flocks failed to detect any evidence of avian influenza in New South Wales.

As well as supporting honey production and export of package bees, the honey industry also services an increasing demand for contract pollination of oilseeds, horticultural, small seeds and vegetable crops.

HONEY INDUSTRY

Production and Trends
Honey production during the year was about average. Major honey crops were obtained from Paterson's Curse, Clover, Yellow Box, Mallee, Red Gum, Bloodwood and Spotted Gum, with production levels being largely determined by seasonal factors such as weather at flowering and strength of hives during honey flows.

Exports are booming as a result of the decline in the Australian dollar. Export of package bees has also increased, one order to Pakistan being for 1.4 tonnes of bees.

As at March 1985 New South Wales had 4553 beekeepers registered, an increase of 122 beekeepers over the previous year. Demand is increasing for contract pollination of oilseeds, horticultural, small seeds and vegetable crops.

Advisory
Successful industry field days were held at the C.B. Alexander Agricultural College (Tocal) and Bathurst Agricultural Research Station. The new Bee Brief quarterly newsletter has proved to be very popular with beekeepers; the four issues during the year covered 64 items.

An Apiary Advisory Officer began duty in the Murray and Riverina Region on 17th June 1985, located at Griffith.

A new Apiaries Act received the Governor's assent during March 1985. This Act is discussed under 'Regulatory Services'.

Quarantine, Diseases and Pests
The Apiculture Section Head oversees the management of the Commonwealth Health Department's honey bee quarantine facility at Eastern Creek. During the year queen bees were imported from America and from the Kisonovosk State Farm (Russia) via Denmark. These Russian queens were Carpathians, the first time this sub-variety of the Carniolan race has been imported into Australia.

A survey conducted to look for the exotic disease chalkbrood could find no evidence of its presence in New South Wales. European brood disease and American brood disease have restricted honey production in some areas. Wider use of irradiation to treat diseased material has reduced compensation payments. The European wasp is continuing to spread. This represents a potentially major pest of bee hives.

Research
Apiculture research conducted at the Central Veterinary Laboratory, Glenfield, into bacterial honey bee brood diseases led to recommendations on the dry feeding of antibiotics for controlling European Brood Disease.

A field trial, partly funded by the industry, was conducted to assess the ability of commercial sunflower cultivars to set seed in the absence of pollinating insects — principally honey bees.

GENERAL PESTS AND DISEASES

European Wasp
The marked increase in the number of wasp sightings and nests reported during 1983-84 continued throughout 1984-85. A total of 353 nests was destroyed throughout the Sydney Metropolitan Area and Wollongong City Council district during 1984-85. A further 25 nests were located and destroyed in country areas, extending from the Victorian border to the central west at Forbes and Coonabarabran; to the highlands at Bowral, Burradoo, Springwood, Robertson and Mittagong; and to the north coast at Taree. Nests were also reported in the Australian Capital Territory. Most of these nests were destroyed by Departmental personnel, but a significant contribution was also made by individual Councils and by pest control operators. More than 600 nests, some very large and containing many thousands of individual wasps, have been destroyed since the inception of the campaign.

European wasp spreads naturally at a relatively slow rate but is also

transported long distances by human agency, usually in the form of hibernating queen wasps. Conditions prevailing in New South Wales are obviously very suitable for nest establishment, and experience over the last two years has indicated that the species must now be regarded as a well-established pest. It is now not possible for the Department to deal with all nests reported in a reasonable time. Priority is being given to nests near schools, hospitals and homes for the elderly. Wider community involvement in the control of European wasp is being urged to curb its spread, and responsibility for control must rest with owners and occupiers.

The thrust of the control program is being varied to involve more actively other organisations, such as local government and private pest control operators, in the destruction of nests. Pest controllers have been briefed on the best methods of nest destruction, close liaison has been maintained with Councils, and information sheets have been prepared for householders to assist them in understanding wasp control. It is now obligatory under the Plant Diseases Act for owners/occupiers to have nests destroyed.

Australian Plague Locust

A major plague occurred in spring 1984 throughout the southern half of the State. It developed from eggs laid by swarms in late summer of the 1983-84 season. The most intensive laying occurred in the Mildura-Balranald-Hay-Hillston area with later, less intensive, laying in the Western Riverina. Following hatching in September 1984, intensive aerial spraying of hopper bands by the Australian Plague Locust Commission (APLC) in the South West Plain was successful in preventing later swarm invasion of the Riverina. The control of bands by landholders in the western Riverina was also successful in preventing substantial swarm formation.

During the campaign, which cost approximately $2.5 million, landholders applied 34 tonnes of insecticide against bands in the western Riverina, and the Department a further 59 tonnes against swarms in this region. The APLC applied a total of 103 tonnes during spring against both bands and swarms in the South West Plain.

The plague was considered to be the most intensive encountered for many years, and the combined campaign between the APLC, the Department of Agriculture and landholders was the most successful ever conducted. The value of crops at risk during spring in the Riverina was over $50 million, and preliminary analysis has confirmed crop savings to be many times greater than the total cost of the campaign.

Pyrethroid Resistance in Cotton Bollworm

An insecticide management strategy for cotton bollworm (*Heliothis armiger*) was implemented by the Department and the Queensland Department of Primary Industries for the 1983-84 season, following the detection of pyrethroid resistance in early 1983. The strategy consists of limiting the use of pyrethroids to a maximum of three sprays within a 42-day period and alternating pyrethroids with other insecticides. *H. armiger* is a serious pest of a wide range of crops, including cotton, sorghum, sunflowers and tomatoes, and the strategy applies to all susceptible crops grown in Queensland and in New South Wales north of a line from Newcastle to Dubbo, extending to Broken Hill.

Growers accepted the strategy extremely well and it will be continued next season with minor modifications.

Wild Dogs

A comprehensive review of wild dog control in New South Wales was undertaken. This review considered submissions from various interested parties, and will be completed in late 1985. The information obtained from this review will assist in providing an effective strategy for reducing the incidence of wild dog predations.

Research: Rabbits

Preliminary trials indicate that the anticoagulant poison Brodifacoum has considerable potential as a rabbit poison at a concentration of 0.005 per cent. Another anticoagulant Bromadiolone was less effective and may require some increase in bait toxicity from 0.005 per cent. The poison 1080 at the lower than recommended concentration of 0.02 per cent was shown to be as efficient as the higher rate of 0.033 per cent.

FISHERIES

Production and Trends

Production of fish, molluscs and crustaceans remained stable from 1983-84 to this year, except for tuna and scallops. The 1984 tuna season was a poor one in New South Wales, but catches in other states remained high. Scallop catches, on the other hand, declined significantly because there were no large settlements following the huge 1978 and 1979 spatfalls.

Abalone catches fell slightly, as predicted last year, but this is not considered to be cause for concern as most fish stocks undergo small fluctuations from year to year. Oyster production was marginally higher than for the previous year, despite extensive losses due to winter mortality.

Details of commercial catches and catch values for 1984-85 were not available at time of printing.

Management

1984-85 was an important year in the management of the fisheries of New South Wales.

The South East Trawl fishery management proposals were finalised and the East Coast Trawl fishery proposals were almost completed. Management of the restricted abalone fishery was further improved by making permits transferable on a two for one basis so that fishing mortality would be reduced, and the economics of the fishery improved.

The number of licensed fishing boats in New South Wales was 'frozen' in August 1984 pending development of a management plan for all coastal and estuarine fisheries, and development of this plan proceeded.

The introduction of these relatively sophisticated plans requires extensive consultation with industry. The New South Wales Fishing Industry Council, which represents most commercial fishing organisations, was established in 1985 and, in concert with these organisations, is expected to facilitate liaison with the Department.

The oyster purification scheme was expanded during the year with approval for two purification plants in New Zealand. There are now 277 purification plants in New South Wales.

The John Lake Centre, at the Inland Fisheries Research Station, Narrandera, was officially opened by Premier Neville Wran in June 1985 This information and educational centre, which will promote inland native fish and the protection of their habitat, was built at a cost of $480,000.

Research

The Department's fisheries research capability was strengthened considerably with the transfer of the Division of Fisheries research staff to the Fisheries Research Institute at Cronulla. The facilities had been considerably upgraded since it was returned to the New South Wales Government after being vacated by CSIRO in 1984.

New fish hatchery buildings were constructed at the Agricultural Research Station, Grafton; the Brackish Water Fish Culture Research Station, Port Stephens; and the Inland Fisheries Research Station, Narrandera.

Commercial Fin Fish Research

Exploratory surveys of deep water trawl-fish resources continued and promising catches of orange roughy and oreo dory were taken.

Preliminary tagging studies on red spot whiting and redfish were followed up with further tagging of over 3000 fish (including morwong) at 6 locations.

Eden-based commercial fishing vessels were used to tag morwong and tiger flathead between Gabo Island and Point Hicks.

Sampling of the catches of all important trawled fish continued at the Sydney Fish Centre and fishing cooperatives. Spawning stock gemfish were again a particular target of the sampling. These data are used to determine the age and sex structure of populations so that comparisons between years can be made.

Papers detailing progress in research on the main species were presented at the 1985 trawl fish workshop, and two short courses for trawl fishers were fully booked out. Further courses on handling tuna for the sashimi market were held.

Research continued on the incidence of red spot disease in the Clarence River. Sampling from various locations has shown a consistent occurrence of early ulcers on fish in freshwater locations. There appears to be no link between incidence of the disease and pesticide levels.

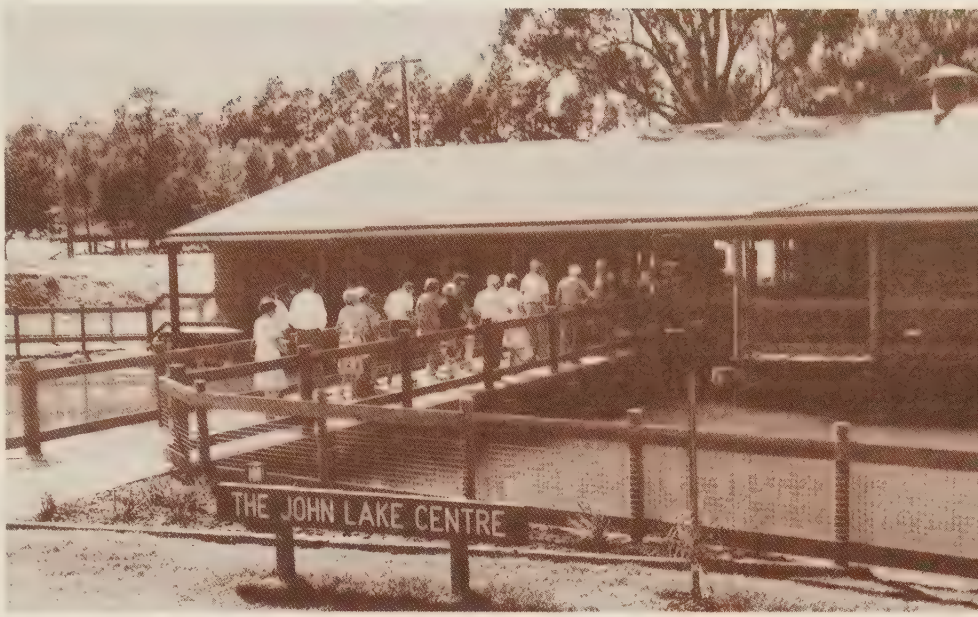
Marine Recreational Fishing Research

The gamefish tagging program continued to grow. Over 10 000 fish were tagged, including 1300 black marlin. Recaptures also increased; the recapture rate is about 2%. The program is now the largest of its kind in the world.

Fieldwork for the study of commercial/amateur conflict in a typical south coast estuary was completed. The creel survey of recreational anglers within the lake compared very favourably with an independently commissioned survey. The data are now being analysed and prepared for publication.

A study of recruitment of larval and juvenile fish to the same estuary was commenced.

The problem of designing a fish attracting device (F.A.D.) suitable for the New South Wales coast has been substantially solved, with the recent placements lasting for 6 months. This is considered a reasonable life span by world standards.



The John Lake Centre, at the Inland Fisheries Research Station, Narrandera, is an information and educational centre designed to increase public awareness of inland native fish and to promote the protection of their habitat. It was officially opened by the Premier in June 1985.

The effectiveness of F.A.D.s in concentrating commercial quantities of pelagic fish has been proved to be limited. F.A.D.s have been remarkably successful, however, in improving recreational pelagic fishing. The expertise gained so far will now be directed more towards F.A.D. design and placement for the recreational fishery.

Oyster Research

Research associated with the oyster purification plan continued with the implementation of a shellfish growing area classification scheme at Port Stephens and Quibray Bay. This involves regular bacteriological monitoring of oyster lease areas. A microbiology laboratory has been set up at the Brackish Water Fish Culture Research Station to facilitate the classification research.

Monthly sampling was initiated to determine the chemical changes in meat composition of oysters in an outbreak of winter mortality, which this year caused the worst losses yet recorded on the southern and central coasts.

A three-part study in relation to the importance of Salamander Bay to the oyster industry was begun. The first section deals with water quality, the second section with the distribution of macrophytes as they reflect changes in land use immediately next to the spat catching area and the third section is a spat settlement investigation.

Further research on the monthly settlement patterns in Port Stephens has provided oyster farmers with a more accurate picture of spatfall and has enabled them to predict and avoid unwanted barnacle catches.

A survey was undertaken of the distribution of the introduced Pacific oyster which has now been found in large numbers in Port Stephens. Restrictions have been placed on the movement of oysters from Port Stephens in an attempt to reduce the risk of spread of Pacific oysters to other areas, and the general problem in relation to the introduction is being closely monitored.

Other Molluscs

Abalone recruitment sampling continued and indicated relatively low numbers of two-year old juveniles compared with one and three-year olds. Catches should thus increase next year and fall again the following year.

Scallop tagging to determine growth and mortality rates continued, as did monitoring the progress of a 1982 spatfall. This group was not as abundant as some earlier ones but did provide for a small diving fishery in Jervis Bay and some limited dredge catches off Bermagui.

Marine and Estuarine Crustacean Research

Landing statistics were extracted from Fishermen's Cooperative records and fortnightly sampling was conducted at the Sydney Fish Centre as part of the continuing program to monitor the north coast prawn fishery.

The program also provided information to the East Coast Trawl Task Force which was to finalise its management proposal in July 1985. During the investigations of this Task Force, professional fishermen expressed the concern that small eastern king prawns of an uneconomical size were being caught offshore during late spring and early summer. The Department has acted upon these concerns by introducing formal closures on grounds voluntarily closed by the fishermen themselves, and starting a program to investigate the geographic distribution and seasonal occurrence of pre-adult eastern king prawns.

Field work on the Clarence River prawn farming project was completed after four farming trials using a one hectare pond. Approximately 900 kg of large school prawns were harvested in each two to three month trial. Growth rates were lower than previous small scale trials, so further work is needed on pond management techniques. Nevertheless, the quality of the farmed prawns was high and they brought a better price than trawled school prawns at market.

An independent economic analysis of school prawn farming based on these trials predicted favourable returns to capital, and a subsequent Prawn Farming Open Day was very well attended.

Preliminary experiments to assess the environmental requirements for king prawn farming were undertaken.

Fisheries inspectors protect a major amateur sport from illegal methods of fishing.

Freshwater Fish and Crustacean Research

A biologist was appointed to a new project to study fish in the Hawkesbury River, and 1984-85 was also the inaugural year of the stream survey program. Both these programs are aimed at determining the environmental requirements of various fish species and providing information on the conservation and management of stream fish resources, particularly in relation to Environmental Impact Statements and Local and Regional Environment Plans.

Two new programs were initiated on the lake fisheries of Burrinjuck and Eucumbene. These programs aim to determine the most appropriate management strategies for stocking regimes and for protection of endangered species or key sport fish species.

Considerable research input, as occasion demanded, was addressed to proposed developments including mining, flood mitigation, water abstraction, dredging and forest logging. The new programs outlined above should reduce the need for such unplanned input and streamline the Department's response to requests for information.

Methods have been further developed to determine recommendations for appropriate seasonal freshwater stream flows. This information is necessary for habitat maintenance for particular fish species, and for other aquatic fauna downstream from impoundments and within waterways where large volumes of water are abstracted.

A detailed report on the fishes and waterways in the Central Western Region of the State was completed. This was part of an environmental study coordinated by the Department of Environment and Planning, aimed at guiding environment-conscious development in the region.

An officer was appointed during the year to investigate fish ladder design and effectiveness. This project will be a cooperative program with the Water Resources Commission.

The warm water fish breeding program continued with 491 000 fingerlings being produced, including 245 450 golden perch and 246 350 silver perch. Ten impoundments were stocked with 424 850 fingerlings. Sales to fishing clubs totalled 50 700. In the past seven years, 27 impoundments in New South Wales have been stocked with 3.1 million fingerlings.

An endangered species research program has also begun. Since the appointment of the biologist in October 1984, emphasis has been placed on broodstock collection. Presently, there are 21 trout cod and 29 Macquarie perch held in ponds at Narrandera.

A Commonwealth employment program provided $303,000 for the construction of a new hatchery building, additional broodstock ponds and fry ponds at Narrandera. This facility will enable the new research project on breeding endangered fish to be undertaken.

A hatchery for breeding the endangered eastern cod at Grafton was completed and fish breeding experiments commenced.

Murray crayfish research entered its second phase after completion of the initial three years of biological sampling and logbook data collection. Management proposals have been proffered for implementation in January 1986. The fishery will be monitored for several years to evaluate the effectiveness of the new management strategies.

Environmental Studies

The collection of additional inventory data fundamental to the sound management of the State's estuaries proceeded, and historical macrophyte mapping continued. The main focus was on the Parramatta River, while old aerial photographs of other estuaries were ordered for additional mapping in the coming year.

Compilation of heavy metal and pesticide residue data continued.

New projects included pilot mangrove transplant trials and preliminary planning for seagrass transplantation experiments. Both of these are essential research programs for estuarine rehabilitation. A pilot study of canal estates in cooperation with the Public Works Department was also begun. It is envisaged that the need for, and type of, future canal estate research will be defined.

The known distribution of the oriental goby, *Acanthogobius flavimanus*, in Australia was extended to the Hawkesbury River/Broken Bay system. This exotic fish is believed to have been originally introduced to Sydney Harbour and Botany Bay from Asia through discharge of ships' ballast water. The occurrence of this goby in the Hawkesbury River/Broken Bay system is the first record from an Australian estuary not used as an international shipping port.

Funds were made available during the year by the Australian National Parks and Wildlife Service for the preparation of draft management plans for proposed aquatic reserves at Towra Point in Botany Bay and Jervis Bay. The Towra Point management plan is designed to complement the plan prepared for the existing, terrestrial Nature Reserve. The Jervis Bay plan recognises the great potential for recreation in the area and seeks to maintain environmental quality, thus ensuring protection and conservation of fish, other marine biota and their habitats.

DEPARTMENTAL SERVICES

ANIMAL HEALTH

Animal Welfare

The Department of Agriculture has always been concerned with the welfare of farm animals and is currently re-appraising its involvement in this area.

Policies have been developed concerning a wide range of farm animal husbandry practices and research procedures. These will greatly assist officers in the development of advisory programs and activities, and in dealing with animal welfare issues raised both by producers and the general public.

It is proposed that the various policies be reviewed regularly and amended as techniques improve or community attitudes on animal welfare change. They have been prepared on an industry basis and cover:

- sheep husbandry practices
- pig husbandry practices
- cattle husbandry practices
- horse husbandry practices.
- deer husbandry practices.
- goat husbandry practices.
- transport of livestock.
- control of noxious animals.
- kangaroo culling.
- rabbit farming.
- experimental procedures.

Departmental publications are in preparation covering many of the issues and the Codes of Practice for the welfare of animals.

Research

An investigation is studying various physiological indications of stress in dairy cattle, beef cattle and sheep, and is determining their relationship with animal management practices and animal productivity.

Pastures Protection Boards

During the year the Minister approved of changes to boundaries of 26 Pastures Protection Districts.

Included in these changes is the abolition of Pilliga Pastures Protection Board.

The Pastures Protection Boards are required under the Pastures Protection Act to levy a rate, based on livestock number, on occupiers of ratable properties. Such rates are used by Boards to cover costs of their day-to-day activities.

Recent High Court decisions have shown that the rating of actual stock is an excise and therefore invalid. For this reason the Department and the executive body of the Pastures Protection Boards (the Council of Advice) have jointly examined proposals for a revised rating system based on a two-tier principle, involving a general rate payable by all occupiers of ratable land and a supplementary animal health levy.

ECONOMIC SERVICES AND MARKETING

Economic Services

Economic analyses of a wide range of issues provided background information for New South Wales agricultural and fisheries policy making.

Issues examined during 1984-85 included assistance to the apple and pear industry, vine pull assistance to the grape industry, general assistance to the dried vine fruit industry, wheat marketing and handling arrangements, and water and land management policy.

Submissions to Inquiries and Government Business

The Department was involved in:

- presenting evidence to IAC inquiries on assistance to the apple and pear industries and on phosphatic and nitrogenous fertilisers
- providing comments on the IAC report on the Southern Bluefin Tuna industry.
- preparing for the IAC vegetable industry inquiry.
- preparing submissions to the Wine and Grape Industries Inquiry.
- providing assistance in the drafting of the new wheat marketing arrangements.
- assessing the proposed dairy industry marketing arrangements.

Divisional members participated in analyses of options for the sugar industry, and irrigation farms in the Murrumbidgee Irrigation Area.

Production and Marketing Research

Applied economics research projects in the production area included an analysis of factors contributing to wheat yields in NSW; evaluating returns to wheat industry research; the economics of minimum tillage cropping techniques; an assessment of the effects of technology in prime lamb production; the impact of alternative pig husbandry practices; a structural analysis of the pig and stockfeed industries; techniques for optimising irrigation water use; an assessment of the declining pasture productivity; an evaluation of enterprise specialisation versus diversification; an economic survey of north coast beef producers; and the economics of part-time farming. New studies included an analysis of cotton marketing options; the economics of cropping in the Western Division; an analysis of management options in the abalone industry; an investigation into the on-farm storage of grain; and a review of farm costs and price trends in the rural sector.

To complement the existing group of economists within the Division, two economists have been appointed to specialist positions. One has been appointed to investigate various aspects of the fishing industry, one project in this area being a survey of New South Wales oyster farmers. The second economist has been appointed to the Cobar Rangelands Research Unit. In conjunction with other members of the Unit, this economist will undertake research into the farming practices and management techniques in the Far Western Region of New South Wales.

Marketing area studies include the development of econometric models of the beef, prime lamb and pigmeat industries. These models have been applied to assessing the effects of concentration in the pigmeat production and processing sectors, and for evaluating the effects of various policy decisions such as meat promotion or the adoption of animal welfare legislation.

Three issues of the Review of Marketing and Agricultural Economics were published during the year.

Market Advisory Services

Research and subsequent advisory activities included the formation of an export oriented fresh fruit and vegetable company, identification of industrial marketing opportunities for honey, market research for the Registered Cereal Seedgrowers' Association, Exotic Fruitgrowers' Association and the Kangaroo Valley Perennial Ryegrass Co-operative, and formation of a new cooperative in the pasture seeds industry.

A report on promotional alternatives was prepared for the Wine Grapes Marketing Board, the feasibility of asparagus as an alternative to dried vine fruit production was examined, recommendations were made on potential new processed dairy products, and a range of optional marketing structures for the emerging fruit industries on the north coast were assessed.

Market advice in the areas of packhouses, export, processing and domestic marketing was provided to the Kiwifruit Growers' Association. Numerous presentations on various aspects of marketing were made to

producers, students and agri-business through seminars, conferences, workshops and lectures.

Commodity Intelligence
The Division of Marketing and Economic Services continued to provide a variety of commodity intelligence information relating to production levels, prices and markets and projections on likely future trends. Information relating to the grains and oilseeds industries was disseminated weekly in the Grain Farmer newspaper, through regular internal distribution of the Cereals and Oilseeds Digest, segments on both ABC and commercial radio programs, and regular liaison with various industry representatives. Prospects in the horticultural and intensive livestock industries were published frequently in Commodity Bulletin and, in the case of the pig industry, a major research report was issued. Information on the extensive livestock industries included regular input into forecasting of the State's meat production of beef, sheepmeat and pigmeat.

A major overview of the situation in the State's rural sector, and the outlook for the next twelve months, was issued as State of Agriculture in New South Wales.

Central Statistics Unit
A large collection of statistical information, including all statistics previously kept by the departmental library and by other divisions, and statistical data from other government agencies, is maintained in the unit. The storing of these on the Department's Agnet computer system with development of specifications for the data base was begun.

Head Office and regional departmental officers can now directly obtain required statistical information from the unit.

Marketing Reporting Service
The market reporting service reported the livestock sales at Armidale, Casino, Dubbo, Goulburn, Gunnedah, Homebush, Tamworth, Tenterfield and Wagga Wagga. It reported fruit, vegetable and cut flower markets at Flemington and provided weekly price information for fruit, vegetables, meat and fish.

In line with the expansion into computerisation, market reports are now being transmitted electronically to newspapers, radio stations and videotext networks. This service augments the traditional means of dissemination.

Export Development Unit
In September 1984 the Minister announced the establishment of an Export Development Unit as part of a State Government initiative aimed at encouraging agricultural exports, and particularly the export of New South Wales fruit and vegetables. Members of the section are Mr Westbrook Haines, Executive Director (Export Development), Mr John Baker, Principal Officer (Export Development) and Mr Nobuhiko Sugimoto, Export Development Officer.

Mr Haines was previously Executive Director of the New Zealand Horticultural Export Development Committee, a body established by the New Zealand Government and credited with the success of the expansion of horticultural exports to many markets over the past six years. He has detailed knowledge of the horticulture industry and other agricultural industries, and wide experience in international markets. Mr Haines has been engaged for a two-year period.

Mr Baker is an experienced horticulturist who has been associated with the production and marketing of vegetables for many years, and brings valuable local knowledge to the export promotion program.

Mr Sugimoto is a specialist in Japanese agriculture.

Establishment of Horticultural Export Development Council
The Council was established in February 1985 to provide an overview of current and future activities in the New South Wales horticultural industries, to advise the Minister and the Department on the needs of export industries and to foster a planned approach to exports by the various sectors of the horticulture industry. It is chaired by Mr Westbrook Haines, and its 10 members are experienced in horticultural production and/or export.

Japan Mission
In March 1985 the Minister led an agricultural mission to Japan to identify opportunities for exports of products not presently being exported to Japan in significant volumes. Among the mission recommendations were that Japan becomes a high priority 'target market' for the horticulture industries in New South Wales. Current horticultural exports to Japan are estimated at less than $5 million annually.

Europe
In June 1985 Westbrook Haines went to Europe to begin a dialogue between New South Wales horticulture producers and key fruit and vegetable importers, based on his long associations with the West European fruit trade.

Citrus
As a result of the Japan mission, the first exports of Sunraysia (New South Wales and Victoria) citrus to Japan are currently underway. Fourteen containers have been sent from Sunraysia as a trial shipment.

Export Seminar
A seminar, convened by the Minister and opened by the Premier, was held on 7th June to bring together a wide range of agriculture industries to examine the potential for increasing agricultural exports from New South Wales.

Industries with a total production value of over $4000 million were represented.

Export Consultative Group
At the conclusion of the Export Seminar, participants accepted the proposal that a consultative group be formed to provide an opportunity for coordination between the various agricultural industry groups concerned with export. The first meeting of the group was convened by the Minister and established a working format to address the issues and concerns identified at the seminar.

Marketing of Primary Products Act, 1983
For information on activities under this Act see the separate Report of the Director of Marketing 1984-85.

Tobacco Leaf Stabilisation Act
In the year ended 30th June, the Unit received applications from three tobacco leaf quota holders seeking the Minister's approval for the transfer to Queensland of 55 427 kg of tobacco quota. Of this, 25 per cent, or 13 856 kg, will be retained in New South Wales for distribution to the remaining producers.

Farm Produce Act, 1983
The Director of Marketing and the Special Economist (Marketing Boards) were respectively appointed Registrar and Deputy Registrar, Farm Produce Act, 1983, from 1st December 1984, replacing A.A. Russell and L.L. Keady of the Department's Legal Branch.

The Registrar was a member of the committee appointed by the Minister to review the workings of the Farm Produce Act and the Farm Produce

Regulation of 1983. The review revealed various anomalies and the committee recommended that the Act and Regulation be amended accordingly.

The major changes recommended related to consignment notes, variation in the disqualification of farm produce sellers, security bonds, recovery of charges, accounting for wasted produce, payment of transport charges and licensing of country-based farm produce sellers. The Minister approved of the recommendations.

Cabinet approval has been obtained to amend the Act in the Spring 1985 session and action is being taken separately to amend the Regulation as approved. One amendment to the Regulation implemented for the coming 1985-86 licensing year introduced another security bond level of $100,000 for farm produce sellers who occupy sites of not less than 110 square metres at the Flemington Fruit and Vegetable Markets.

The two Inspectors, Farm Produce Act, in the first half of 1985, visited all known country-based farm produce agents and merchants to acquaint them with their responsibilities under the Act and the requirement to become licensed as from 1st July 1985.

Chicken Meat Industry Act, 1977

The Director of Marketing participated in a review of the Chicken Meat Industry Act which included examining the need to alter the composition and activities of the Chicken Meat Industry Committee. Discussions were held with chicken meat producers and processors. Final recommendations will shortly be prepared for consideration by Cabinet.

	1983-84	1984-85
	$	$
Commonwealth Rural Industry Trust Accounts		
Australian Chicken Meat Research Committee	21,946	17,644
Australian Dairy Research Committee	20,260	26,308
Australian Meat Research Committee	803,721	689,585
Australian Pig Industry Research Committee	73,841	75,109
Barley Industry Research Committee of N.S.W.	53,247	142,184
Barley Industry Research Council	29,393	201,046
Cotton Research Committee	197,109	280,441
Dried Fruits Research Committee	56,678	85,976
Fishing Industry Research Committee	93,822	248,531
Honey Research Committee	15,590	17,800
Oilseeds Research Committee	80,280	112,704
Poultry Research Advisory Committee	35,826	38,714
Tobacco Trust Account	35,240	36,030
Wheat Industry Research Committee of N.S.W.	493,019	921,029
Wheat Industry Research Council	380,014	704,020
Wool Research Trust Fund	491,695	587,129
Other Major Grants		
Commonwealth Special Research Grant	29,212	37,510
I.R.E.C. (Rice Industry Constributions)	268,503	271,020
Rural Credits Development Fund	204,302	191,000
Swine Compensation Fund	171,250	90,000
	$3,572,839	$4,773,800

Departmental field days provide an excellent opportunity to relate rural activities to the general public.

RESEARCH SERVICES

The Department is by far the largest research organisation in the New South Wales public service. It conducts applied research for all sections of agriculture and fisheries, much of it in the field and at sea, but most originates from central and regional research units. Research is undertaken at 40 departmental units, ranging from large research institutes through a number of research stations to quite small units.

The main financial support for research came from Consolidated Revenue, and about eight per cent from rural industry research grants. Some are detailed in the table.

A further $500,000 was allocated from miscellaneous sources, including the Mushroom Growers Association, the Central Coast Citrus Growers Association, the Water Research Foundation of Australia Ltd, the National Energy Research Development & Demonstration Council, the Horticultural Stock & Nurseries Act Account, the Apple & Pear Research Foundation, the Australian Macadamia Society, the Processing Tomato Research Committee, the Australian Centre for International Agricultural Research, and donations from various agricultural companies.

Field Test for Soil

A rapid field test for soils has been developed by the Chemistry Branch so that departmental advisory officers can give on-the-spot advice to clients on fertiliser use and soil problems. The test allows the determination of pH, and aluminium, manganese, nitrate and phosphate levels. The test results have already been calibrated against laboratory data for some soils and work to expand this range is now underway.

ADVISORY SERVICES

Primary Products Promotions Unit

Highlights of the year included the Agriculture and Human Nutrition Conference and the R.A.S. Show, with Unit staff playing a major organisational role in both. Other promotional activities were conducted at the A.U.F. Trade Fair, Education Week, Dubbo

Steer Show, Henty Field Days, Gosford Expo, The Royal Canberra Show and Senior Citizens' Week.

Several new publications have been produced — the Gold Brand Beef poster, a booklet on healthy menus for pre-schoolers, the Chinese Vegetable poster and a chart on the seasonal availability of fresh fruit and vegetables.

Papers were presented to the Western Australia Fruit and Vegetable Industry Advisory Committee, The Table Grapes Industry Technical Conference, Teacher Trainees at Wollongong University, V.I.E.W. Clubs, The Rural-Urban Rotary Club, N.S.W. Food Inspectors' Conference, Nutrition Conference of Unilever, The L.G.P.A. District Council and the Exotic Fruit Growers' Marketing Seminar.

In the first half of the year, four officers were employed under the Community Employment Programs. This greatly assisted permanent staff and allowed many extra promotions to be conducted.

Garden Advisory Service

The Garden Advisory Service attended to 22 998 inquiries: 20 002 telephone, 2302 personal and 694 mail. An answering machine was installed so that callers who were unable to wait could leave their numbers for a return call from the Department. This resulted in fewer calls being lost during busy times.

Several talks to garden clubs and a series of lectures and demonstrations were given in southern New South Wales towns during Senior Citizens' Week.

Monthly appearances on Channel 7's 'Romper Room' continued with educational topics covering food plants and ornamentals. Two 10-week courses on home gardening were conducted through WEA with 36 to 40 people in each course.

During January a display depicting the work of the Garden Advisory Service was mounted at the New South Wales Government Information Office in Hunter Street, Sydney. Public response was very favourable.

Laboratory Computing

Chemists at BCRI have developed a network of microprocessors, data storage devices and printers to process and print the results of chemical tests on soil and water samples. The network can provide an up-to-the-minute progress report of the passage of samples through the laboratory. This is vital for answering telephone inquiries and for good laboratory management. When the network is connected to the Department's AGNET system, advisory officers throughout the State will have direct access to analytical results.

TECHNICAL SERVICES

Carcase Classification

New South Wales abattoirs continued to participate in an informal voluntary accreditation scheme for measuring carcases destined for the domestic market. This accreditation scheme requires participating abattoirs to maintain a high standard of carcase classification measurements (in particular for fat depth). These carcase measurements are monitored by officers from the Export Inspection Service (EIS).

Beef

The New South Wales Meat Industry Authority strip branding (Gold Brand) of selected young beef carcases is continuing to expand. At the end of June 1985, 25 of the State's 60 slaughtering establishments were authorised to use the Gold Brand. However, only 19 of these works are regularly branding (the others brand only on request or are temporarily closed). These 19 accounted for approximately 49 per cent of the State's beef kill in June 1985. These abattoirs do not brand all their kill, but in June 1985, 20 per cent of the New South Wales beef kill was Gold Branded.

Pigs

Currently there are 16 abattoirs (9 export and 7 domestic) accredited for pig carcase classification. These abattoirs kill about 90 per cent of New South Wales pigs with about 70 per cent of the total kill being measured for fat depth. This fat measurement is considered to be a critical factor in determining the price paid to producers.

Evaluation of Feedstuffs for Ruminants

In 1982 a farmer service was established using current laboratory facilities for the evaluation of feedstuffs for ruminants. The initial reactions to the service were encouraging and the constant flow of samples to the service during the drought and post-drought periods has indicated that a service of this type has a role as an advisory tool for ruminant production. Below is a breakdown on the sample numbers and types received by the service to June 1985.

Research and Advisory Services Activities for All Professional Officers, 1984-85

	Region 1	Region 2	Region 3	Region 4	Region 5	Head Office and Statewide Establishments	State Total
Agfacts	18	52	12	44	19	62	207
Press articles	575	956	946	823	837	296	4 433
News letters produced	40	95	32	98	80	18	363
Contributions to newsletters	207	365	107	274	331	130	1 414
Original radio broadcasts	383	641	2 331	729	666	182	4 932
Original TV programs	38	56	427	52	190	57	820
Field days held	210	359	206	321	390	72	1 558
Meetings held	537	672	268	628	696	638	3 439
Conferences and schools held	54	177	27	80	83	81	502
Agricultural shows	56	67	37	107	51	141	332
Total farm visits	5 273	10 514	3 711	8 299	9 280	2 669	39 746
On-farm trials	193	584	243	492	710	169	2 391
Papers and notes published in scientific journals	30	104	6	60	45	83	328
Books, book chapters and post-graduate theses	8	18	4	9	15	12	66
Contributions to proceedings of societies	48	106	22	78	91	135	480
Regional and district bulletins	40	95	32	98	80	18	363

Year	1982 (June +)	1983	1984	1985 (to June)
Grains	153	167	443	167
Roughages	136	230	137	131
Silages	75	130	91	45
By-products	58	122	48	35
Mixed feeds	71	118	145	107
Miscellaneous	41	36	22	36
Pasture/ Forage crops	158	733	1200	170
Total	692	1536	2086	691

The large number of samples in the pasture/forage crop section is indicative of the growing interest in the nutritive value of pastures and crops available for use in animal production. Many of these samples originate with agronomists and include accurate information on growing conditions for individual pastures/crops. The next development of the service will be a data base which will allow ready access to all information supplied for each sample. This data can be used to develop notes on the nutritive value of individual feedstuffs.

Transfer of Livestock Protection Section

Head Office staff of the Livestock Protection Section covering drought, flood and bushfire relief, noxious animal and insect control, and administrative assistance to Pastures Protection Boards, transferred from the Division of Animal Production to the Division of Animal Health. All aspects of Pastures Protection Board work, including animal health, are now located in the Division of Animal Health.

Pest Diagnostic Services

During the year Entomology Branch at the Biological and Chemical Research Institute received 5765 inquiries through the branch inquiry officer; many of these were related to European wasp. Upgrading of the insect and mite collections continued with the incorporation of another 7329 specimens.

Pesticide Registration Section

The Pesticide Registration Section circulates to departmental officers details on new registered pesticides, on major new claims for registered pesticides, and on pesticide orders made under the Pesticides Act, 1978. The Section also provides information on all labels registered under the Act to Queensland Agricultural College for inclusion in the publication QAC Peskem.

AGRICULTURAL ENGINEERING

Field Projects

Conservation Farming technology continued as the main field project theme, involving equipment modification, component developments and advisory programs. These and other field programs covered a wide range of subjects during the year.

Industry Assistance

The Branch's program was augmented with support from five Government industry grants: Wheat Industry Research Committee (two projects), Reserve Bank (two projects) and Wheat Industry Research Council.

Deutz Australia has kindly loaned a four-wheel drive tractor and diesel power pack for use in the Department's tillage engineering research programs.

An assessment was made of overall departmental field plot header needs. Because of the devaluation of the dollar, the Australian-built K.E.W. machine from Kingaroy has become cheaper than the imported machines previously in favour. This machine can be recommended, particularly as it employs locally built components and replacement parts.

Pesticide Application Technology

All of the Agricultural Mechanisation Advisory Officers have participated in investigation and advisory work on pesticide application technology, relating to broadacre spraying and orchard application. The thrust of the broadacre work was towards more efficient calibration. Work was aimed at helping landholders to obtain correct application rates, without overspraying or missing areas, thus achieving more efficient and economical spraying.

The orchard spray work was part of an interdisciplinary effort to evaluate three types of orchard spray units and to determine which gave the best pest and disease control in pome and vine fruit.

Major Farm Machinery Field Days

Mechanisation Advisory displays were mounted at Broadacre Field Days, Moree Agricultural Traders Exhibition, Eastern Australian Rural Trade Expo, Australian National Field Days, Agquip, Murrumbateman Small Farm Field Days, Henty Machinery Field Days and Mudgee Small Farm Field Days. The main themes covered were Conservation Farming, Direct Drilling, Spray Equipment Calibration and Solar Pumping. These activities represent a major advisory thrust, with an estimated 15 000 landholders viewing the demonstrations and material presented.

Publications

There has been a significant boost in engineering Agfact titles published. The Directory of New South Wales Farm Equipment Manufacturers and several international conference papers were also released. Departmental engineers contributed 6 out of the total agenda of 80 technical papers at the biennial Institution of Engineers Conference on Agricultural Engineering, which took place at Bundaberg in August 1984.

REMOTE SENSING

Mapping lands for agricultural suitability was completed for five million hectares, covering seven images for four major areas involving 14 shires. The use of Landsat data for this work resulted in considerable cost savings over alternative mapping methods.

District agronomists in the north-west of the State routinely use the imagery to improve their understanding of conditions and for work scheduling. This operational use in the north-west is supported by a major research and development program designed to exploit the data further. The program will begin with visual interpretation techniques to allow district agronomists to identify winter cropping areas. This information will be stored in a database. The next step will be to identify and store all summer cropping. Once these are operational, the database can be analysed for crop area, crop history and rotations, and long term trends.

Work on image enhancement, supported by a Commonwealth Special Research Grant, has led to enhancements that facilitate the interpretation of tree cover. A program was begun to develop a procedure to map tree cover and to commence mapping this resource.

The Section successfully monitored the 1984-85 rice crop (see OTHER CEREALS). The Department, accepted as one of 30 principal investigators worldwide, will be evaluating the use of high resolution data to extend the rice monitor for monitoring horticulture.

Remote sensing technology is being used as the basis for a weed detector to activate individual nozzles on a herbicide spray boom. The function of

the detector is to discriminate green vegetation from other covers within the nozzle impact area. Successful development of this prototype into an operational device should lead to a significant reduction in herbicide consumption in no-till and minimum-till cultivation.

A spectroradiometer was purchased by the Department as part of a consortium and will be used to investigate the possibility of extending the usefulness of the weed detector, as well as for establishing the parameters necessary to map salinity and selected weed species.

BIOMETRY

Biometricians are located in Head Office, at the Biological and Chemical Research Institute, and in each of the Regions, to provide specialist consulting for all departmental staff.

Biometricians provide the experimental designs for experiments on farmers' properties, and analyse the data from them. Recent research in the Biometrical Branch has produced new designs that have been used this year to improve the comparisons between varieties. Progress has also been made in developing designs for horticultural experiments in which the treatments need to be changed to answer current questions.

The use of data collected by Landsat to estimate acreages of crops and to predict their yield requires both advanced computing equipment and advanced statistical methods. Such statistical methods have been developed recently in the Biometrical Branch.

Methods have been developed to analyse data obtained from animal breeding projects on variables such as fleece rot that must be scored on a categorical scale. These methods are needed to extract the information from the data collected in sheep and cattle breeding experiments such as those at Trangie and Grafton. Computer programs have been produced to allow the extensive calculations needed in these analyses to be carried out for the first time.

Computer information retrieval systems have been developed to improve the reporting of summaries of data such as causes of condemnation of carcases at abattoirs and levels of pesticides in carcases sampled at abattoirs and processing works.

Advisory officers on dairy cattle and pigs submit data to the Biometrical Branch on costs of production and returns. These are used to prepare budget-type summaries and critical analyses on aspects of profitability. The computer programs for a similar service for poultry growers were prepared by the Branch, but this scheme is managed by advisory staff.

Sampling projects are regularly undertaken by the Branch. Examples are:

- the sampling procedure and analysis for the pilot brucellosis survey, undertaken to assess the feasibility of the eradication program in New South Wales
- pome fruit cool storage stocks are estimated every month from data provided by district horticulturists
- abattoir sampling procedures.

The initial Australia-wide statistical investigation for the National Pig Carcase Classification Scheme was carried out by the Branch. This involved consulting abattoir staff and pig buyers, writing computer programs to collate the data, performing statistical analyses and writing up the results.

PESTICIDES AND ENVIRONMENTAL STUDIES

Pesticide Monitoring

As part of a continuing program to monitor pesticides in the environment, studies have been completed in the Namoi and Gwydir Valleys, Narran Lakes, and the Tweed and Clarence Rivers to determine levels of specific pesticides in aquatic and terrestrial fauna, water and sediments.

DDT residue levels in the cotton growing areas of the Gwydir Valley have continued to decline since this pesticide was phased out of use in cotton in 1981. No evidence of the buildup of fenvalerate (a pyrethroid) or endosulfan was found.

Further surveys have been initiated, and samples will be analysed in the facilities of the new F.B. Guthrie Laboratory at Rydalmere, as well as at the Board of Tick Control Laboratory at Lismore.

Pesticide Advice

One of the functions of the Pesticides and Environmental Studies Unit is to provide information to the public on pesticides and their environmental effects. During the year lectures were given to the Ryde School of Horticulture, to authorities such as the Department of Main Roads and Elcom, and at various seminars.

Over 100 phone and written inquiries were handled on matters ranging from pesticide disposal to concern on the environmental effect of specific compounds.

Reviews have been prepared on dieldrin, heptachlor, lindane and endosulfan in animals, plants and the environment. This work was partly funded by the New South Wales Dairy Corporation.

Land Assessment

The Pesticide and Land Use Unit has a coordinating function in land use. Land use surveys have been undertaken in all Regions as part of a program to provide agricultural land use suitability maps and reports to all councils. This will assist planners in protecting prime crop and pasture land.

Seven shires (total area 30 000 ha) are being assessed by the Department's Soil and Land Use Studies Section in regional studies. Twelve shires (total area 43 000 ha) are being assessed for local environmental plans for Local Government authorities.

Over 40 agricultural land determinations under the Mining Act were undertaken throughout the year.

Environmental Impact Assessment

As a requirement of the Environment Planning and Assessment Act (1979) the Department comments on proposals that could have an adverse effect on agriculture. Inputs have been made into approximately 30 developments, including major ones such as the site for the second Sydney airport and open-cut coal mining.

Waste Disposal on Agricultural Land

The Department is taking part in two projects on the disposal of sewage effluent on agricultural land: one involves sewage sludge and the other treated effluent. Although sewage can improve soil structure and supply essential plant nutrients, it also contains heavy metals such as cadmium and lead. These are very toxic and the long term consequences of this practice must be studied carefully.

In the first project, sludge obtained from the M.W.S. & D.B. treatment plant at Glenfield is spread on land at the Department's Agricultural Research Station at Glenfield. The main task of the study team is to evaluate the influence of the sludge on soil structure, fertility, plant growth and animal health. As this type of sludge disposal costs only 25%

of conventional methods, substantial savings are possible.

The second project is concerned more with the environment. At present, effluent from West Camden treatment plant is returned to the Nepean and Hawkesbury Rivers and poses a pollution problem. The project aims to use this effluent for irrigation at the John Macarthur Institute at Camden Park, and a detailed survey is underway to assess the suitability of the site for such a scheme.

AGRICULTURAL EDUCATION

C.B. Alexander Agricultural College (Tocal)

The primary purpose of C.B. Alexander Agricultural College is to help people who intend to be, or who are, on the land. The College offers full-time Certificate and Advanced Certificate courses in Agriculture for up to 130 students and a part-time Dairy Apprenticeship course for up to 40 students. The materials used by over 600 clients enrolled in the Department's home study courses in Farm Management and Farm Office Management are produced at the College. Many short courses are offered by the College and in conjunction with other functions of the Department and other groups.

A revised Certificate in Agriculture course was introduced at Tocal in February 1985, following extensive consultation with industry and other educators. The revised course has amplified the practical emphasis of the previous course, through basing more of the course in the field. The College has installed its first set of microcomputers for teaching students enrolled in full-time, part-time, correspondence and short courses.

The student residential area has been extensively renovated through a Community Employment Program.

The Correspondence Courses Production Unit attracted a record number of students — 612 — and made substantial improvements to the materials forwarded to clients. An audio studio has been constructed and the first tapes will soon be added to course materials.

The second Tocal Small Farms Field Day was held as a joint activity between Advisory Services and the College with the cooperation of Dungog Adult Education Group and Rural Scene Promotions. Despite extremely wet weather, nearly 6000 people attended.

Murrumbidgee College of Agriculture

The College provided full-time training for 89 certificate course students and 15 short courses for 479 primary producers.

All full-time certificate courses were revised to increase the proportion of time allocated to practical skills training to one week in every three weeks. By gaining the assistance of 40 additional cooperating farmers the College was able to increase the on-farm training component for each of the one-year courses to six weeks work experience for each student.

Advanced Certificate course students gained experience in the use of a wide range of farm-based computer programs through the College's recent purchase of 10 Apricot computers. Two of these students achieved such a high degree of competence in the use of database and graphics programs that they were invited to act as tutors at staff development and farmer short courses.

The first stage of the College's $1.3 million Short Course Centre was completed in April 1985. This comprised extensions to the library and a farm mechanisation training centre. Both these facilities have been used regularly by students and short course participants.

Meetings were held with farmer groups and advisory officers to plan

Completion of a $1.3 million Short Course Centre at the Murrumbidgee College of Agriculture will extend the range of short courses relevant to current technical and management problems in the rural community.

continuing education programs to be conducted at the Short Course Centre following its projected completion in August 1985. Feedback from farmers through this consulting process has confirmed the anticipated strong demand by the rural community for short course programs which are relevant to current technical and management problems.

PUBLICATIONS AND INFORMATION

There are now 823 titles in the Agfact series, and many of these have run to second or third editions. Despite the success of the new subscription facility, demand for Agfacts over the counter and by mail order has not diminished.

The subscription facility, publicised by advanced advertising late in 1984, provides for subscribers to receive at least 300 Agfacts in 12 months from the time of payment of the $45 subscription. Mailings to subscribers began in February 1985, and the list has grown to more than 1500. To service the list, stocks of Agfacts are set aside by the Government Printing Office, and mailed in packages about 10 times a year. As a 'bonus', other publications, such as posters, are included from time to time.

In addition to Agfacts, nearly 300 other items, ranging from plastic show bags and single-leaf newsletters to colour posters and books, were produced from the Sydney office.

As part of moves towards fully electronic typesetting, two Apricot microcomputers with Wordcraft software were installed in the editorial section. These developments will continue to be made in cooperation with the Government Printer.

Over-the-counter sales of publications totalled $192,497 — which with the $69,975 received for subscriptions gave a grand total of $262,472.

LIBRARY SERVICES

Acceptance of technological change continues to grow and the role of the librarian is changing rapidly. There is now less emphasis on the collector/custodial role; network members are more concerned with organising a service in their Region and with specialising in particular information-gathering techniques.

Cooperation with other institutions is sought to rationalise use of scarce personnel resources and to maximise the input of those resources.

Current projects are:

- Establishing with Riverina College of Advanced Education an Agricultural Resources Exchange Association which collects publications surplus to requirements from agricultural libraries, makes them into useful sets, and offers them to libraries in Australia and developing countries.
- The integration of ABOA (Australian Bibliography of Agriculture) into the standard funding pattern of interstate activities.

New programs within the Department consist of a planned definitive Bibliography of Publications 1890+, restricted overseas exchange of publications based on microfiche copies, and the introduction of a library manual designed for use by all departmental locations which allows each location to know what library resources are held where, and to address their requests accordingly.

RURAL YOUTH

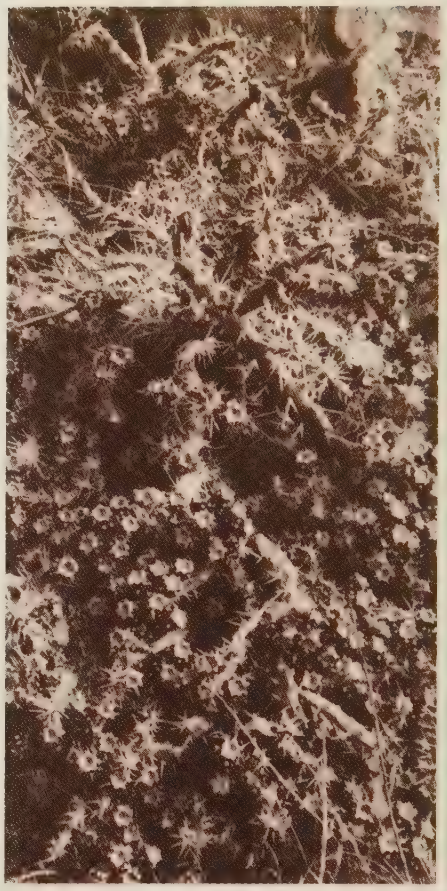
The amalgamation of Senior and Junior Sections under the one administrative organisation has been completed.

Rural Youth has taken a leading role in International Youth Year. Its major contribution has been to participate actively in the Urban to Country work experience scheme whereby city youths are given the opportunity to work on farms as a part of their school work experience.

AGRICULTURAL BUREAU

The Bureau is currently celebrating its 75th Anniversary. Major projects for the year have been:

- a submission to the Senate Committee of Inquiry on Animal Welfare
- a submission to the I.A.C. Inquiry supporting Biological Control of Paterson's Curse
- an awareness program on pesticides use (Adult Education Board Grant).



Tiger pear (*Opuntia aurantiaca*) can significantly reduce grazing areas. Some biological control of this weed has been achieved with the use of cochineal insects.

PRICKLY-PEAR DESTRUCTION COMMISSION

Management

The Commissioner is responsible for the effective management of the Commission and utilisation of available resources. The Commission operates in a similar way to a Departmental Division and has staff located in two regions of the State: the New England, Hunter and Metropolitan Region and the Orana and Far Western Region.

Services Provided

The Commission provides a regulatory and advisory field service to landholders in New South Wales. Prickly-pear insects for biological control are bred in controlled temperature rooms and greenhouses and supplied free of cost. Chemical is supplied at cost, excepting that chemical used to control Tiger Pear *(Opuntia aurantiaca)* receives a 50% subsidy. The administration section provides advice to the general public and answers search inquiries from solicitors regarding land transfers.

Advisory Service

The Senior Inspector, four District Officers-in-Charge and 20 property inspecting officers provide an 'on the farm' advisory service to landholders. All aspects of biological, chemical and mechanical control are described and/or demonstrated as required.

The Commission's research staff, Dr J.R. Hosking (Entomologist) and Mr P. Sullivan (Technical Officer) provide specialised advice on biological control to Commission staff which is then passed on to landholders. When required, the research staff visit problem areas to assess difficult situations on the spot and liaise with landholders directly.

Inspection and research staff participate at field days, such as Agquip, Mudgee Small Farms Field Days, Tocal, Agricultural shows and other gatherings where advisory services are available to landholders. Whenever possible, the Commission's involvement is integrated with the Department of Agriculture. No charge is made for advisory services.

Special Deposits Account 2534: Prickly-Pear Destruction Fund

Statement of receipts and payments for the year ended 30th June 1985

Previous Year $		Current Year $	Variation % (—)
	RECEIPTS		
60,000.00	Special Statutes Appropriation	60,000.00	—
1,185,000.00	Supplementation from the Consolidated Fund	1,270,000.00	7.17
0.00	Special Supplementation from Consol. Fund	50,000.00	*
21,066.00	Search Fees — S.11 & S.12 Certificates	21,958.00	4.23
51,837.25	Prickly-Pear Control Works — Charges	41,081.09	(20.74)
34,299.40	Sale of Herbicides and Equipment	34,338.80	0.11
88,178.00	Sale of Motor Vehicles and Other Major Plant	50,815.00	(42.37)
20,557.72	Miscellaneous	7,931.50	(61.41)
1,460,938.37	TOTAL RECEIPTS	1,536,124.39	
864.733		36,134.82	
1,461,803.10	TOTAL	1,572,259.21	5.77
	PAYMENTS		
253,067.96	Salaries'	274,398.24	8.42
616,956.49	Wages	618,515.87	0.25
13,805.89	Allowances	15,277.75	10.66
77,146.53	Workers Compensation Premium & Payroll Tax	133,225.24	72.69
82,544.25	Travelling Allowances and Expenses	103,113.20	24.91
120,591.86	Maintenance of Motor Vehicles & Caravans	119,088.49	(1.24)
115,402.49	Purchase of Motor Vehicles & Caravans	55,474.49	(51.92)
102,807.86	Purchase of Stores, Plant & Equipment	142,163.47	39.25
11,805.46	Rents, Rates, Freight & Cartage	14,190.09	20.19
23,923.53	Buildings, Improvements & Insurances	20,905.73	(12.61)
7,615.96	Postal and Telephone Expensess	9,653.30	26.75
1,425,668.28	TOTAL PAYMENTS	1,506,005.87	
36,134.82	Balance 30th June 1985	66,253.34	83.35
1,461,803.10	TOTAL'	1,572,259.21	5.77

Property Inspection Program 1984-85 (Areas in ha)

	Bingara District	Dubbo District	Mudgee District	Singleton District	Tamworth District	Totals
Total Number of Inspections						4176
1.7.84–31.12.84	677	327	417	669	373	2463
1.1.85–30.6.85	603	273	230	262	345	1713
Area Inspected						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	717 564	295 607	142 848	61 207	184 659	1 401 885
Area Infested						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	159 186	47 821	42 185	39 901	58 090	347 83
Area Satisfactorily Controlled by Owner						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	97 423	25 026	9028	32 099	33 183	196 759
Area To Be Treated By Owner						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	29 378	20 052	33 157	7206	21 390	111 183
Area To Be Treated By Commission						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	32 385	2743	0	596	3517	39 241
Estimate of Hours to Treat (Chemically)						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	61 353	12 350	31 257	7182	30 780	142 922
Estimate of Litres of Chemical Required						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	224 423	32 471	166 039	42 441	106 748	572 122
Number of New Infestations						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	8	0	3	25	7	43
Number Of New Property Records						
1.7.84–31.12.84	0	0	0	0	0	0
1.1.85–30.6.85	10	0	11	29	9	59
Number of Property Records Removed from Control System						
1.7.84–31.12.84	62	68	30	228	70	458
1.1.85–30.6.85	84	10	7	31	13	145

TRAINING AND STAFF DEVELOPMENT

Two types of training workshops are organised for professional staff, Communication Skills Workshops and Specific Skills Workshops.

Communication Skills Workshops draw participants from Regions and Divisions throughout the State. Nominations are made by the Regions and Divisions and 25-30 participants are selected. In December 1984 more than 70 nominations were received for 25 places. A similar number were nominated for the Communication Skills Workshop in May 1985.

The courses were based at C.B. Alexander College and Murrumbidgee Agricultural College. Four main areas were dealt with:

- public speaking
- writing
- radio
- television.

Tutors who are specialists in their field took small groups for instruction in the practical, rather than theoretical, aspects of each of the study areas.

Specific Skills Workshops were based at District or Regional level. Regional Directors of Agriculture and Regional Directors of Advisory Services assisted in the determination of needs for regional staff.

During the year over 30 Specific Skills Workshops were organised by the Principal Officer (Training) on topics such as 'Meeting and Meeting Procedures', 'Basic Black and White Photography' and 'Public Speaking'.

OVERSEAS PROJECTS

In addition to its continuing support for programs of the Australian Development Assistance Bureau, this year the Department provided assistance to the Australian Centre for International Agricultural Research (ACIAR) in implementing its overseas projects.

The Department continued management of Phase II of a land settlement project in Sri Lanka as agent for the Bureau. Expenditure on Phase II since work began in 1980 is now $2.42 million.

Senior departmental specialists participated as advisers and consultants for the Bureau and ACIAR on short assignments to Sri Lanka, Bhutan, Bangladesh, Thailand, China, Malaysia, Philippines, Papua New Guinea and Indonesia. Twenty-six officers spent a total of 102 weeks on overseas assignments.

The Department supports a number of overseas projects, including one in Sri Lanka. Senior departmental specialists participate in the projects as advisers and consultants.

The Department maintained its liaison with the Agricultural Bureau, Guangdong Province, China, through the provision of procurement services for equipment and materials.

The resources of the Department were made available to trainees from several Asian countries for experience in agronomy, horticulture, irrigation farming and animal husbandry.

REGULATORY SERVICES

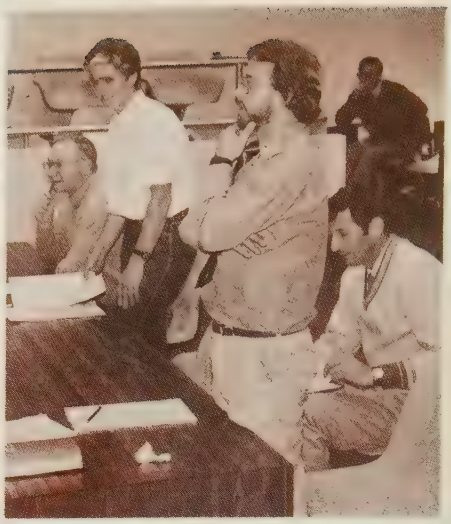
Regulatory services provided by the Department are concerned with:

- controlling or eradicating diseases and pests of plants and animals
- ensuring high quality in agricultural and fisheries products, particularly foodstuffs and such things as seeds, pesticides, fertilisers and stock medicines
- preventing entry of exotic plant and animal diseases and pests
- maintaining standards of conduct and performance in all enterprises related to agriculture and fisheries.

These powers and responsibilities were vested in the Department through various Acts and their Regulations.

Regulatory Legislation

The Legal Branch coordinated the preparation of legislation (including amendments to existing statutes), issued summonses for prosecution, and appeared on behalf of the Department in defended cases. Officers of the Legal Branch also conducted legal training seminars throughout the State and at Head Office to assist staff in their regulatory activities under various Acts.



Officers of the Legal Branch conduct training seminars, including mock courts, to help staff in their regulatory responsibilities under various Acts.

The following general activities were undertaken under State Acts: summonses issued, 77; proclamations, 19; notifications, 3; gazettal of appointments, orders and miscellaneous notices, 151.

Main Acts Concerned With Regulatory Activities

The Department's regulatory activities were carried out under the following main Acts:

State Acts: Agricultural Holdings Act, 1941; Agricultural Scientific Collections Trust Act, 1983; Apiaries Act, 1985; Banana Industry Act, 1969; Canned Fruits Marketing Act, 1979; Cattle Compensation Act, 1951; Chicken Meat Industry Act, 1977; Dairy Industry Act, 1979; Dried Fruits Act, 1939; Egg Industry Act, 1983; Farm Produce Act,1983; Fisheries and Oyster Farms Act, 1935; Fertilizers Act, 1985; Grain Handling Act, 1954; Horticultural Stock and Nurseries Act, 1969; Marketing of Primary Products Act, 1983; Meat Industry Act, 1978; Noxious Insects Act, 1934; Pastures Protection Act, 1934; Pesticides Act, 1978; Plant Diseases Act, 1924; Potato Growers Licensing Act, 1940; Poultry Processing Act, 1969; Prickly Pear Act, 1924; Registration of Stock Brands Act, 1921; Seeds Act, 1982; Stock (Artificial Insemination) Act, 1984; Stock (Chemical Residues) Act, 1975; Stock Diseases Act, 1923; Stock Foods and Medicines Act, 1940; Swine

Compensation Act, 1928; Sydney Farm Produce Market Authority Act, 1968; Tobacco Leaf Stabilisation Act, 1967; Veterinary Surgeons Act, 1923; Wheat Marketing Act, 1984; Wine Grape Processing Industry Act, 1979.

Commonwealth Acts: *Quarantine Act* 1908-73; *Export Control Act* 1982; *Fisheries Act* 1952.

Summary of Legislative Activities

The following legislation was assented to:

Acts	Date of Assent
Canned Fruits Marketing (Amendment) Act, 1984	4-12-84
Wheat Marketing (Amendment) Act, 1984	26-9-84
Wheat Marketing Act, 1984	31-10-84
Fisheries and Oyster Farms (Amendment) Act, 1984	23-11-84
Pesticides (Amendment) Act, 1985	27-03-85
Fertilizers Act, 1985	27-03-85
Apiaries Act, 1985	29-03-85
Total 7	

Regulations	No. of Amendments
Egg Industry Act, 1983	1
Farm Produce Act, 1983	3
Fertilizers Act, 1985	1
Fisheries and Oyster Farms Act, 1935	11
Horticultural Stock and Nurseries Act, 1969	1
Marketing of Primary Products Act, 1983	3
Meat Industry Act, 1978	7
Noxious Insects Act, 1934	1
Pastures Protection Act, 1934	2
Pesticides Act, 1978	2
Seeds Act, 1982	1
Stock (Artificial Insemination) Act, 1948	2
Stock Disease Act, 1923	2
Stock Foods and Medicines Act, 1940	1
Swine Compensation Act, 1928	1
Veterinary Surgeons Act, 1923	1
Total 40	

Pesticides Act

The Pesticide Registration Section is responsible for the administration of the Pesticides Act, 1978 and allied matters.

Amendments to the Pesticides Act were assented to by the Governor on 27th March 1985.

Certain provisions relating to Inspectors' powers, the repeal of the Aerial Spraying Control Act, 1969 and other consequential or ancillary changes commenced on that date.

As a result of the increasing concern on issues of personal safety by primary producers, environment and consumer groups, users of pesticides, and the general public, a new position of Director, Agricultural and Allied Chemicals has been created. Mr D.E. Weedman, the former Registrar of Pesticides, has been appointed to that position. Policy matters on pesticides have become the specific responsibility of the Director.

The Pesticide Registration Section processed applications for registration of new pesticide products, approval of containers, registration of labels, and issue of permits during the year.

Chemical Residues

There has been a continuing reduction over the past 10 years in the prevalence of chemical residue problems in cattle.

With this good progress in the cattle industry it has been possible to divert the existing field and laboratory resources to expand the sampling rate for poultry, pigs and sheep.

New Apiaries Act

The Apiaries Act, 1985 received the Governor's assent on 29th March 1985 and will be phased in during the next 12 months. The section controlling nuisance bees will take effect from 1st September 1985, registration provisions from 1st April 1986, and the remaining provisions from 1st July 1986, at which time the Apiaries Act, 1916 will be repealed.

The main purpose of the Apiaries Act is to prevent, control and eradicate diseases and pests which afflict bees and apiaries. This is achieved by registering beekeepers, recording movements of hives, inspecting hives and destroying hives infected with diseases such as American Brood Disease. The legislation makes provision to compensate beekeepers whose hives have been destroyed.

Another significant part of the new Apiaries Act bans the importation of the aggressive African honey bee which makes unprovoked attacks on people. The African bee can breed with our honey bees, as has occurred in South and Central America following its accidental release in Brazil in 1956.

Quarantine Act

Amendments to the *Quarantine Act* transferred the Commonwealth responsibility for animal and plant quarantine from the Department of Health to Primary Industry. These services are administered at State level by this Department. In 1983 the animal and plant quarantine inspection services in New South Wales were integrated to provide improved surveillance of high risk quarantine areas. The increased efficiency of this single agricultural quarantine service has resulted in a 10 per cent saving with staff numbers.

Plant Diseases Act

Powers under this Act were used throughout the State to prevent the spread of major pests and diseases. The fruit fly quarantine zone of the Murrumbidgee and Murray River Irrigation Areas remained free of fruit fly for a further year. The activities of inspectors and council employees in the application of whole town baiting programs to prevent the establishment of fruit fly in the zone was supported by an Order under the Act.

A prohibition on the importation of unbarked pine logs and pine bark from Queensland, South Australia, parts of Victoria and northern New South Wales was imposed on account of the Bark Beetle pest *(Ips grandicollis)*. This was aimed at assisting the Forestry Commission to prevent or delay the spread of this pest to the highland pine forests of Bathurst and Tumut where changes to silviculture practice to manage this pest could have detrimental effects on second rotation establishment of pine in frost prone areas.

Despite intensive efforts by the Department, the aggressive pest European wasp *(Vespula germanica)* has continued to spread in metropolitan and country districts. Greater community involvement will be necessary to control European wasp in future. An Order under the Act now requires owners or occupiers of premises to treat or cause to be treated infestations of the wasp.

Amendments to Legislation

The regulations under the Stock Diseases Act, 1934 were amended to provide increases of maximum penalties to $1,000 for breaches of the regulations.

Proposals to amend substantially the Veterinary Surgeons Act, 1923 were approved by Cabinet.

The regulations were amended under the Stock (Artificial Insemination) Act, 1948 to provide more appropriate control over changes in this industry. These amendments provide for the issue of provisional Certificates of Competency in artificial breeding procedures, and increasing the range of Certificates of Competency in regard to cattle.

FARRER MEMORIAL TRUST

Farrer Memorial Research Scholarship Fund

The Farrer Memorial Trust was established under a set of instructions dated 16th October 1911. Following the death of William James Farrer, pioneer wheat breeder, in 1906, a committee was formed to raise subscriptions for the establishment of a Memorial Fund, control of which was transferred to the Trust.

The Trust was initially set up to make periodic awards of a Scholarship for 'study or research in agricultural problems' but was later amended to include the delivery of an annual Oration and Medal Presentation.

The Director-General of the Department of Agriculture, New South Wales, Mr George Knowles, is the Chairman of the Trust.

Mr P.R. Schofield, the 1982 Farrer Scholar, finished his studies in 1984 and was awarded the degree of Doctor of Philosphy from the Australian National University.

Mr Brett Summerell was awarded the 1985 Farrer Memorial Research Scholarship and will use his award to research the relationship between minimum tillage cropping and crown rot of wheat.

The 1984 Farrer Memorial Medal was awarded to Dr W.V. Single, a former Principal Research Scientist with the Department of Agriculture at Tamworth. The Medal was presented to Dr Single at a function held in the Great Hall of the University of Sydney on 3rd October 1984.

Financial Summary for Year Ended 31st December 1984

	$
Investments	71,700
Other Current Assets	19,989
Income from Investments and Other Assets	10,097
Expenditure	7,578
Excess of Income over Expenditure	2,519
Donations Received were:	
Wheat Marketing (Barring of Claims) Fund	2,000
Wheat Industry Research Committee of New South Wales	4,000

A donation of $1,814 from the New South Wales Flour Millers Council was also received to meet part of the Scholarship allowance expenditure.

ADMINISTRATION

Finance Branch

Progress continued towards the introduction of Program Budgeting with the preparation of system specifications and benchmark requirements for a computerised accounting system. Two computer systems were tested and formal negotiations were undertaken to purchase one package. The system will be implemented during 1985-86 financial year.

The purchasing procedures used by the Department were reviewed. New guidelines were issued to all sections of the Department as part of the Manual of Accounting Procedures.

The Finance Branch issued 17 490 cheques for $156,326,000 and 32 853 receipts totalling $43,440,000 during the 1984-85 financial year.

All financial delegations were reviewed and updated in respect of the Public Finance and Audit Act, 1983.

Finance

The 1984-85 budget was presented in the traditional line format, but a supplementary set of figures detailed the 1984-85 allocations and expenditure in a program format.

Overall, the Department spent $108,019,000 from the Consolidated Fund Recurrent Expenditure Account, against an original budget allocation of $106,523,000. The difference was supplemented by Treasury to cover costs of award increases and other justified expenditures.

Income to the Department from fees for services rendered and other miscellaneous receipts amounted to $12,751,000.

Special Employment Schemes

Community Employment Program (CEP). In 1984-85, the Department was granted $2.8 million to fund 13 CEP Projects, including tick control on the north coast, a land use survey in the Hunter Valley, the study of tree dieback, and library and herbarium projects in the New England area.

The largest single project, costing $1.3 million, was to develop and preserve the newly acquired Camden Park Estate. This project provided approximately 90 jobs for 26-52 weeks around Campbelltown and Camden.

Another major project was the repair and restoration of the Fisheries Research Establishment (previously operated by CSIRO) at Cronulla, which was costed at $600,000 and provided 43 jobs for 26-52 weeks.

N.S.W. Technical Jobs for Women Program. In November 1984 the Department was allocated $298,000 which provided 20 women with an initial 12 months employment and training in technical jobs with a view to achieving permanent employment in the Department.

Youth Employment Scheme (YES). YES is a wholly State funded program especially directed at young people. During 1984-85 the Department provided employment for 222 young people, for 17-39 weeks. This was done by means of two intakes (September 1984 and February 1985) and cost a total of $1.25 million.

Trainee Typist and Clerical Assistant Project. In June 1985 approval was given for a Trainee Typist and Clerical Assistant Project. This Project was a total allocation of $99,076 and provided for 10 positions of 30 weeks duration, located in Head Office.

A feature of this Project was its high training components. Weekly and block classes in keyboard and office skills were provided by TAFE.

Training and Staff Support. Funding continued into 1984-85 for two CEP Project Officers and Assistants who provided training and staff support for employment scheme personnel as well as project development and administration.

The Farrer Memorial Medal annually honours a person who has rendered distinguished service in agricultural science in Australia. The 1984 recipient, Dr W. V. Single, is a retired Principal Research Scientist from the Department. The Chairman of the Trust, Mr G. H. Knowles, made the presentation.

A total of 400 CEP employees participated in 26 Personal Development Programs around New South Wales. These Programs concentrated on communication skills, self esteem and job seeking skills.

In addition to on-the-job training, programs were also offered in various work and technical skills including horticulture, beef cattle, carpentry, leatherwork, motor maintenance, video operation, fencing, pastures, bushfire fighting, office skills, computers and supervision skills.

Community Employment Program Video. A video program was produced by CEP employees on the north coast. This program recorded the achievements of the Projects in the Region, as well as the views of the CEP personnel employed. It is being widely used outside the Department by administrators of employment programs in other Departments.

CEP Training Project Review and Report. In April 1985 a Review of the Department's CEP Training and Staff Support Project was held in Head Office. Among those attending were representatives of the Ministry of Employment, the Department of Employment and Industrial Relations, the Department of Technical and Further Education, the Department of Industrial Relations, the Soil Conservation Service and the Forestry Commission. A report based on the information presented was given wide circulation.

Equal Employment Opportunity Branch

An Equal Employment Opportunity Branch was created, which encompasses the functions of Recruitment, Staff Development, E.E.O. and Counselling Services. The Department's initiative is a unique and innovative approach to the implementation of E.E.O. in Public Employment in New South Wales and was undertaken to increase the effectiveness of E.E.O. by highlighting its importance and ensuring adequate staffing and financial resources.

The Department's Ethnic Affairs Policy Statement was prepared. This document examined the Department's services and their accessibility to members of the ethnic community, and included strategies to ensure that the range of services provided by the Department is available to all members of the community.

An E.E.O. Resurvey of the Department's staff was undertaken to provide an accurate database for measuring the Department's progress in the area of E.E.O., and to identify any difficulties which required further strategies to be developed and acted upon. During the execution of the resurvey over 70 departmental establishments were visited, with 81 per cent of staff responding to the resurvey.

A policy on Repetition Strain Injuries, designed to prevent further occurrence of these injuries, was prepared and distributed to every staff member.

Staff in the metropolitan and country areas were counselled on a variety of issues ranging from personal difficulties such as health, marital, alcohol and drug related matters to organisational concerns. Specialist services available from Community Health Units and the Public Service Board Counsellor were utilised where necessary.

Recruitment

Four hundred and forty-one positions were advertised.

The Unit participated in the Work Therapy Training Scheme in association with the Commonwealth Department of Community Services, to provide short term training opportunities for disabled persons. It also participated in the Aboriginal Clerical Assistants Scheme in consultation with the Public Service Board.

Training

New procedural guidelines have been adopted in accordance with Equal Employment Opportunity policy for the nomination and attendance at in-house and external staff development workshops, seminars and activities.

The Unit designed, developed and implemented some 18 Staff Development and Training core workshops, seminars and activities for both regional and metropolitan staff. It also designed and issued a variety of self instructional training kits and staff development leaders' guides on such areas as Ministerial Letter Writing, Induction, Job Seeking Skills, Selection Techniques for Committee Members, Supervision, and Departmental Communication.

A survey of senior departmental staff designed to assist in the formulation of a Senior Management Development Program strategy was completed.

Thirty-nine in-house staff development/training courses, workshops and seminars were conducted involving the attendance of 468 officers. The programs ranged from Skills Training Programs on Ministerial Letter Writing and Selection Techniques, to Awareness Programs such as Computer Familiarisation and Occupational Health and Safety.

Computing and Management Services Branch

The final stage of a project begun in 1982 was implemented with stage 3 of Agnet: the installation of Prime computers at Trangie, Yanco, Rydalmere, Glenfield and Tamworth. This brought to nine the number of Prime mini-computers within the Department.

Prime's office automation system was introduced to allow electronic communication between Departmental staff at all levels.

A training section was commenced within the Branch and a training officer appointed to run computer courses throughout the State for departmental officers.

Following tenders the previous year, benchmark tests were prepared and two tenderers were benchmarked for the supply of micro-computers. A contract was awarded to Barson Computers for the supply of the Apricot microcomputers. During the year some 200 Apricot computers were ordered.

The Branch processed the 1983-84 Management Information System which analysed the work carried out by some 1500 research, advisory and technical staff.

Accommodation Unit

The Unit completed 15 major projects during the year and commenced work on 16 others which will be finalised next year. The projects mainly related to fitouts for newly acquired premises and the refurbishment of Head Office locations.

The Unit oversighted the construction of the Department's first country computer facilities at Yanco and Trangie and the relocation of the Scientific Branch of the Division of Fisheries to its new site at Cronulla.

Management Audit and Analysis Branch

The Branch completed 29 financial, administrative, and operational audits during the year. This was the first year in which the scope of audits was expanded to consider the operational aspects of the locations/functions audited. In addition, the Branch conducted 7 comprehensive reviews to evaluate procedures, investigate issues, and make recommendations for operational improvements.

The concept of regional audits was introduced during the year, involving the review of basic financial and administrative functions of regional sub-units by audit teams from within each region.

Staff Branch
A fully computerised staff establishment and personnel records system was implemented with all data entry being completed. The system provides for a ready access to staff and establishment records and statistical information.

Industrial Section
The inaugural meeting of the Consultative Committee on Technological Change was held in January 1985. The basic aim of the Committee is to ensure that obligations under the Technological Change Agreement are met by both parties. The Committee consists of representatives from the Department, the Public Service Association and members from the Vocational Branch of each Division.

Part time leave without pay was introduced on and from 24th September 1984. All officers and temporary employees employed under the Public Service Act who work the maximum number of hours for their classification are eligible to apply. Part time leave without pay is a concession which is intended to provide staff with greater flexibility of employment, equal employment opportunity, and increased job opportunities.

Occupational Health and Safety
During the year there was an increase in the number of Repetition Strain Injuries, particularly among keyboard operators. The Department recognised the problem and after discussions with the Department of Health, the Public Service Association and departmental officers, an interim Policy Statement was distributed alerting all staff to the matter.

The Department's Safety Officer again visited most departmental establishments during the year to investigate serious accidents involving personal injuries. Accidents of a lesser magnitude were discussed to determine the causes and find ways of preventing a recurrence.

Senior Staff Changes
Mr R.T. Swan resigned his position of Chief Administrative Officer to take up a position of Assistant General Manager, Maritime Services Board.

Mr J. Thoms resigned his position of Financial Controller to take up a position of Deputy Director, Administrative Services, Maritime Services Board.

Mr P.J. Small, formerly Assistant Secretary (Staff), Public Works Department, was appointed as Chief Administrative Officer.

STAFF AT 30TH JUNE 1985

Minister for Agriculture and Fisheries
Hon J.R. Hallam, M.L.C.

Director-General
G.H. Knowles

Deputy Director-General
G.R. Gregory

Executive Director (Administration)
S.J. Day

Executive Director (Fisheries)
Dr D.D. Francois

Executive Director (Policy & Services)
J.E. Jessup

Executive Director (Regulatory Services)
B.D. Buffier (Acting)

Executive Director (Research & Advisory Services)
Dr S.G. Grimmett

Executive Assistant to the Director-General
R.J. Jessup

Executive Assistant to the Deputy Director-General
F.S. Benecke

Chief, Division of Agricultural Services
P.A. Witschi

Chief, Division of Animal Health
D.A. Dickinson

Chief, Division of Animal Production
G.C. File

Chief, Division of Fisheries
Dr P.A. Ayres

Chief, Division of Marketing & Economics
Dr C. Gellatly

Chief, Division of Plant Industries
R.A. Claxton

Chief Administrative Officer
P.J. Small

Director of the Biological & Chemical Research Institute
Dr A.M. Smith

Regional Director of Agriculture, Region 1*
B.D. Scarsbrick

Regional Director of Agriculture, Region 2
Dr A.N. Smith

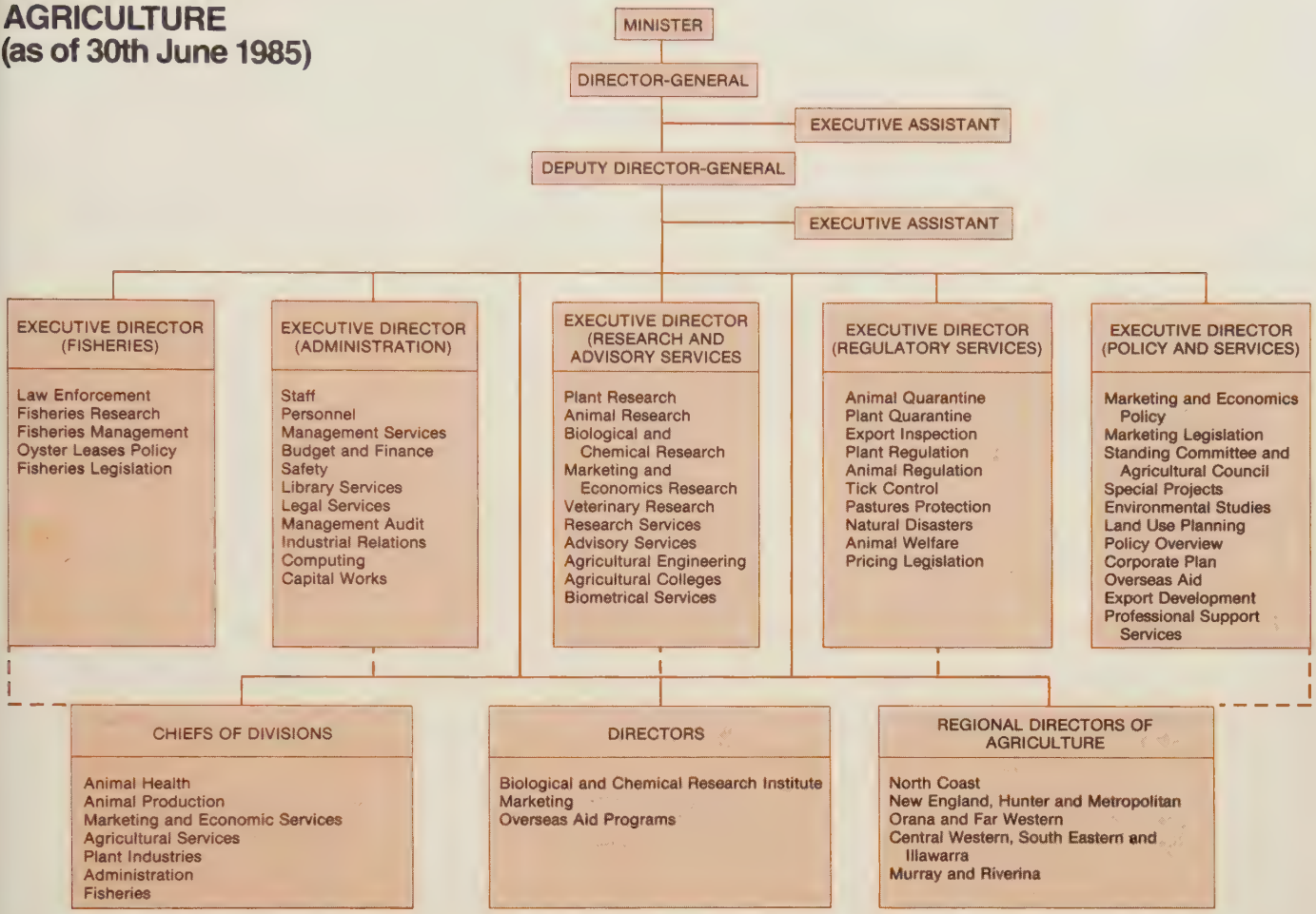
Regional Director of Agriculture, Region 3
O.R. Southwood

Regional Director of Agriculture, Region 4
Dr D.G. McDonald

Regional Director of Agriculture, Region 5
D.E. Toohey

* Region 1: North Coast. Region 2: New England, Hunter and Metropolitan. Region 3: Orana and Far Western. Region 4: Central Western, South Eastern and Illawarra. Region 5: Murray and Riverina.

ORGANISATION STRUCTURE DEPARTMENT OF AGRICULTURE (as of 30th June 1985)



*Staff Statistics as at 30th June 1985**

	Region†					Metro-politan	Other	Total
	1	2	3	4	5			
Administration	20	21	13	13	13	186		266
Plant Industries	43	110	31	54	98	371		707
Animal Health & Production	88	149	64	138	86	183		708
Agricultural Support Services	133	290	82	154	279	126		1064
Cattle Tick	91		1		1			93
Fisheries	17	50	4	26	22	100	15	234
Sub-total	392	620	195	385	499	966	15	3072
NESA	1	3	3	1	2	4		14
TJFW	2	4			3	8		17
CEP	22	14	2		7	76		121
YES	5	7				3		15
YIP		1			22	2		25
NESA Apprentices	1			1	1			3
Displaced Apprentices	3	2			2	1		8
Sub-total	34	31	5	2	37	94		203
Ministerials — BTC							217	217
— PPDC							38	38
Sub-total							255	255
Total	426	651	200	387	536	1060	270	3530

* Actual staff members employed at 30th June: there were also 348 vacant positions and 67 positions filled by casuals.
† Region 1: North Coast. Region 2: New England, Hunter and Metropolitan. Region 3: Orana and Far Western. Region 4: Central West, South East and Illawarra. Region 5: Murray and Riverina.

REGIONAL REPORTS

REGION 1 — NORTH COAST REGION

Land Use Planning
The Draft Regional Environmental Plan for the North Coast Region was released for public comment. The main features of the plan were the protection of land in class 1, 2 and 3 and special uses category, the development of agricultural protection zones and the abolition of 'concessional lots'.

The region's Liaison Officer visited the United States of America and Great Britain for a study tour/investigation into various aspects of rural land use policy and procedures being applied in those countries.

Assistance was given to a number of councils regarding the suitability of subdivision proposals.

Fisheries
The major construction work on the fisheries research facility at Grafton Agricultural Research and Advisory Station was completed. Work is underway with the beautification of the area and the provision of minor pieces of plant and equipment. A series of ponds complement the building which houses feeding tanks and laboratory facilities. Studies into the causes and development of red spot disease continued.

Horticultural Crops
Expansion of horticultural crops has continued, with interest now being directed towards crops with export potential. Marketing difficulties being experienced with avocados have reduced the level of interest previously shown in this crop. Industry support, particularly from the North Coast Exotic Fruit Growers' Association, has resulted in the formation of the North Coast Horticultural Council. This umbrella group was formed to coordinate activities with the Department's Export Marketing Group. Lychees, kiwifruit, macadamias and custard apples were exported during the year to either South East Asian or European markets. Investigations are being made into the development of the packing shed at 'The House With No Steps' at Alstonville as the centre of the marketing plan. Following discussions with all parties, three horticultural producers have been directly appointed to the Board of Management. It is predicted that the export market will become increasingly important to the north coast horticultural industry over the next few years.

Crossbreeding of Cattle
The Grafton Crossbreeding of Beef Cattle project continues to interest beef producers in this state. The culmination of last year's work was a field day which attracted an audience of over 600 local and interstate producers. Last year saw renewed interest in beef production stimulated by generally higher product prices and lower returns from alternative enterprises. Those entering the industry or expanding production have looked to crossbreeding technology as an aid to their production methods. The increasing interest was reflected in the conducting by local livestock officers (beef cattle) of a cattle producers' tour of Queensland. North coast producers were shown the latest developments in crossbreeding and management being introduced into the Queensland coastal belt.

Pasture Species Adoption
Over the years a number of introduced pasture plants have shown promise under trial at Grafton Agricultural Research and Advisory Station. These have included Bargoo Joint Vetch, Kenya White Clover and a number of leguminous cover crops suitable for soil erosion protection in horticultural plantings.

Difficulty in producing seed in commercial quantities has precluded the adoption by producers of these species. The appointment of a Seed Production Officer at Coffs Harbour may hasten the production of seed and shorten the time taken for the introduction of the new plants into local production systems.

Pesticide Residues
A total ban was imposed in the region on the use of organochlorines in agriculture, although dieldrin may still be used to control white ants in the building industry. The ban was received relatively well by agricultural industries and was supported by the banana and cane growers, the two biggest users of this material. The Regional Director of Agriculture and Regional Director of Advisory Services have met with representatives of the Big Scrub Environmental Centre with a view to holding regular meetings for the discussion of general pesticide questions.

The Kempsey Task Force investigating pesticide residue problems was strengthened with the appointment of a veterinary officer to Coffs Harbour. Investigative work conducted in the Kempsey area led to the adoption of a number of practices which ameliorated

Lychees were one of a number of tropical fruits exported to either South East Asian or European markets.

the problem to some extent. Further monitoring of soil pesticide residue levels continued. Sampling of cane lands in the northern part of the region commenced in an endeavour to determine the level of organochlorine residues. This work became critical, as the continuing slump in cane prices stimulated landholders to look to vegetables or livestock raising as alternative enterprises.

The Spray Application Technology Working Party met during the year to discuss the contribution made by unsatisfactory spraying techniques to high pesticide residue levels.

Weed Control
More insects were released for the control of the north coast weeds salvinia, groundsel bush and ragweed. These plant-specific insects gave encouraging results in trials conducted in recent years. Damage caused to target plants was variable but generally satisfactory. This technique gives continuous control and has the additional advantages of low cost and environmental soundness.

The three weeds involved in this program have proved to present difficult

control problems, with groundsel bush occurring widely in national parks, salvinia in domestic water supply systems and ragweed in urban areas. The use of biological control removes the hazards of spray drift, environmental pollution and contamination.

Direct Drill Project Team
Close liaison has developed between the Department and the Soil Conservation Service regarding direct drilling and other soil conservation practices. Direct drilling as a technique for the establishment of soybeans is being adopted widely by local producers. Investigation continues with various types of planters in an endeavour to improve seed placement, penetration and sod retention. Rates and methods of pesticide application are receiving attention, as are the critical factors of spray machinery design and nozzle type. Results of research into minimum tillage in the sugar industry in Queensland are being examined to determine if these techniques have application here.

facilitated the production of high quality video material which was used extensively at shows and in advisory activities during the year. Included with the audio visual material was a video tape outlining the employment and training of people employed under both these schemes.

The Department's training of short term employees received favourable comment from administrators of these schemes, who were provided with audio visual and written material describing the training being conducted.

REGION 2 — NEW ENGLAND, HUNTER AND METROPOLITAN REGION

Seasonal Conditions
The year began with good rain throughout the region. Since then, however, most of the region has experienced dry conditions, many areas being drought declared.

Each year, 10 000 people visit the L. P. Dutton Trout Hatchery at Ebor. Improved facilities at the Hatchery include a new storage dam, water reticulation system and visitor centre.

Employment Schemes
One hundred and fifty people were employed under the PEP and YES employment schemes with a sum of $1.5 million being expended on wages and materials. These schemes made a valuable contribution to the effectiveness of the Department's operations, enabling considerable maintenance to be undertaken on dips and yards in the Tick Quarantine Area. Unemployed people were also involved with the development of the fish research facilities at the Grafton Agricultural Research and Advisory Station. The employment of graphic artists, cameramen and script writers

Fisheries
The L.P. Dutton Trout Hatchery, east of Ebor, has been further upgraded with the completion of a 50 ML storage dam. Work has also begun on a new water reticulation system and a large visitor centre to cater for the 10 000 visitors each year.

Worm Resistance
The control of internal parasites of sheep is the main animal health problem on the Northern Tablelands. Veterinary staff this year carried out a major anthelmintic resistance survey on 40 properties and found significant levels of resistance in the main internal parasites to all commonly used drenches. A drench evaluation service was subsequently offered to producers.

Departmental veterinary and advisory officers have worked on the promotion of 'Wormkill', a sheep internal parasite program developed by the CSIRO. More than 75 per cent of sheep producers in the area are now using the program.

Education
Following extensive consultation with industry, a revised Certificate in Agriculture course was introduced at C.B. Alexander Agricultural College, Tocal, in February. The revised course has more emphasis on practical skills, including the acquisition of 45 commonly required farm skills.

At the end of 1984, 59 people gained the Tocal Certificate in Agriculture and 44 gained the Tocal Advanced Certificate in Agriculture.

Australian Winter Cereals Collection
The former Australian Wheat Collection was expanded to incorporate national collections of barley, oat and rye cultivars. The collection has been renamed the Australian Winter Cereals Collection. Establishing the collection will take three years and will involve obtaining cultivars and growing some 10 000 plots to detect identical lines and collect data. All material to be included in the collection will be enclosed in moisture-proof packets and stored at –18°C.

Shannon Vale
The Shannon Vale Field Station, near Glen Innes, is being used in the evaluation of native and exotic tree and shrub species. Eight thousand seedlings have been planted to test various techniques of ground preparation, mulching, weed control, watering and time of planting. The influence of plantings on farm productivity, environmental factors and insect populations is being determined.

Citrus Export to Japan
As a result of research carried out at the Gosford Horticultural Postharvest Laboratory, commercial shipments of citrus fruit to Japan have begun. Trade commenced when Japanese quarantine authorities accepted the effectiveness and safety of a newly developed fumigation treatment for the control of the Queensland fruit fly. Japanese authorities had previously been unprepared to allow entry of the citrus fruit because of the danger of the introduction into Japan of the fruit fly.

Beef-N-Omics
Livestock Officers (Beef Cattle) in the region began the pilot studies for the statewide Beef-N-Omics program. Already 20 workshops have been conducted with beef producers. These are proving to be a very effective means of extension, looking at the overall efficiency of beef cattle property management with the use of computers.

Trees on Farms
The Trees on Farms program for the north was launched by the Minister at a seminar held at Shannon Vale, Glen Innes, in February 1985. As a result, two major advisory programs have been launched concentrating on the New England Tablelands and the Hunter Valley. A full time position of Advisory Officer (Trees) was created to coordinate the regional contribution to the program. A major trees display was staged at the Tocal Small Farms Field Days and a survey is being undertaken to determine the extent of tree cover in the valley.

Conservation Farming
A Conservation Farming Advisory Program was begun during the year, concentrating on reduced tillage. A formal cooperative relationship has been developed with the Soil Conservation Service to plan and launch a Conservation Farming Advisory Program for the north.

Computers
During the year, a new computer facility was established at the Agricultural Research Centre, Tamworth, to service the computing requirements of the Department within the region.

Parthenium Weed
The successful Parthenium Weed Awareness Program of 1983-84 was continued during the year. Dry conditions contributed to the low incidence of Parthenium plants found in the northwest. Inspections were begun at the Queensland border, to ensure that all headers entering New South Wales had been thoroughly cleaned.

Land Use Planning
The region continued to conduct land use studies based on Local Government areas. Advisory Officers made a major contribution to land use studies conducted in the shires of Inverell, Parry, Nundle, Dungog, Gloucester and Great Lakes. The regional environmental plan for the Central Coast plateau areas was also completed following a significant departmental input.

The Department is undertaking a research program on feral pigs to reduce lamb mortality and crop damage.

REGION 3 — ORANA AND FAR WESTERN REGION

Staff
The advisory staff complement was enhanced with the appointment of the Special Livestock Officer (Rangelands Management), an Agronomist and an Economist to the Rangelands Management, Research and Advisory Unit at Cobar.

A Research Agronomist was appointed to Walgett, where the Wheat Industry Research Committee of New South Wales has funded a project to develop pastures systems to follow the cropping phase.

Promotions, transfers, retirements and resignations resulted in new appointments to 6 of the 27 veterinary, ranger and fisheries positions in the region.

Good progress in the Brucellosis Eradication Campaign allowed the Border Crossing Station at Broken Hill to be closed, the Inspector being transferred to Bourke.

Seasonal Highlights
Good early winter rains in 1984 led to abundant growth of speargrass and barley grass, especially in the Western Division. This seed caused severe irritation and damage to sheep, especially lambs and hoggets, in early summer.

The early rain produced a substantial fuel burden. With the lack of effective later rainfall, this resulted in disastrous bushfires in the Wilcannia, Cobar, Dubbo and Mudgee areas.

Pastures deteriorated as the year progressed. Feed and water shortages became progressively worse through summer with acute autumn shortages. By June all but one of the 13 Pastures Protection Board districts were drought declared. Late autumn rain delayed winter cereal sowing. Crop growth was slow and pasture was poor.

Stock Disease Highlights
The relatively dry conditions, combined with good management practices, resulted in no major disease outbreaks. Most problems faced by stockowners related to sub-optimal nutrition and associated conditions.

Despite considerable check testing for tuberculosis, no confirmed cases of infection were found. The current status of tuberculosis in the region is the best ever, with no known infected herds.

Progress in the Brucellosis Eradication Campaign is on target with the State goals. In RVO Dubbo area, by June 1985, 95 per cent of herds had achieved Confirmed Free status, and the disease prevalence is down to 2 positive animals per 10 000 tested.

Animal Health Programs
A component of the exotic disease plans was tested in a feral pig eradication exercise in the Macquarie Marshes. Valuable training and experience, as well as public awareness, resulted.

Sentinel poultry flocks strategically located around the region were bled regularly for activity of viruses transmittable to humans, such as Australian Encephalitis and Ross River Fever. Similar surveys on dogs in Bourke surprisingly found high infection rates. This project is in cooperation with the Health Commission.

Investigations into the effects of Mucosal Disease virus infections continued. Of 16 early pregnant heifers exposed to infection, five aborted, one delivered a premature dead calf, four delivered still born infected calves and six had live but infected calves, some of which have subsequently died.

Advisory Programs
Matters relating to conservation farming, including acid soils, have been a component of most agronomy and livestock programs in recent years, and these are being expanded and integrated into a regional program.

Committees have been formed with the Soil Conservation Service, and production of a publication on 'Guidelines for Conservation Farming in Central NSW' is well in hand.

The program Trees on Farms has been supported by regional LGPA Consultative Committees with a request for a policy on clearing for cropping in western areas of the Central Division adjoining the Western Division where controls apply.

Development of the Rangelands Management, Research and Advisory Unit has provided valuable support and incentive to advisory officers operating in the Western Division and has produced a team approach to servicing primary producers. Attention was focused on burning as a method of shrub control.

Proper pesticide use was a priority, emphasis being placed on pesticide selection, concentration and application.

In the Macquarie Valley irrigation area, water use efficiency continues to be of primary concern. A program for water use efficiency is being developed incorporating soils, climatic and crop water requirement data.

Fisheries
Many fish were stranded in several isolated inland lakes as water evaporated and was not replenished by subsequent flooding of the Darling River. Restricted permission was granted to professional fishermen from Menindee to net these lakes so the fish did not perish.

Upon completion of Windamere Dam near Mudgee, 270 000 brown trout and golden and silver perch fingerlings were released. The release augers well for recreational fishing in the years ahead.

Research
Major new research activities were initiated during 1984-85 in the management of semi-arid rangelands in western New South Wales. Experiments on the management of the rangelands began on three land systems in the 'soft red' country of the Western Division.

The construction, with Australian Meat Research Committee funding assistance, of a fully integrated feed mill and computer controlled cattle feedlot has been the highlight in developments of animal science research at Trangie Research Centre in 1984-85. Objectives include the evaluation of the nutritional efficiency and carcase composition of beef cattle herds that have been selected for high growth rate.

Macquarie Valley irrigated soils management research has been expanded to include the amelioration of problems associated with irrigating red brown earths. An experiment to evaluate alternative cultivation techniques, gypsum application and organic matter incorporation was established at Trangie with Wheat Industry Research Committee of New South Wales funding support.

The development of alternative, safe 'take-home' poisons for feral pig control is the objective of a new project within the vertebrate pest section. Several new, fast acting anticoagulants are being evaluated in the project.

Computerisation/Agnet
A major development was the installation of Aglink network with the installation of the Prime computer at the Agricultural Research Centre, Trangie. This computer was also linked to Broken Hill, Cobar, Bourke and Walgett. Computer terminals have now been located in half the offices in the region.

REGION 4 — CENTRAL WEST, SOUTH EAST AND ILLAWARRA

Advisory Services
New advisory initiatives include major group programs on conservation farming with the Soil Conservation Service and the promotion of trees on farms with the Forestry Commission.

Other programs include herd recording and artificial breeding for the dairy industry on the South Coast and Illawarra, and the introduction by District Agronomists of group spraying for the control of serrated tussock.

Direct mail newsletters for farmers are now distributed over most of the Region together with two newspaper supplements on agriculture with a circulation of 120 000.

Special programs have been conducted on farm investment and seminars have been held for bankers and accountants.

Environmental issues, especially in land use planning and pesticide use, have received major consideration. Land resource mapping in that part of the Region east of Forbes is largely completed and considerable effort has been given to the State Environmental Planning Policy. Environmental impact studies have included an assessment of potential effects on fisheries.

Research Services
Research initiatives have included some specific aspects of conservation farming, the production of fodder trees, spray application technology, feral animal control and limitations to commercial wool production.

Significant results have been achieved in the development of machinery for direct drilling through modification of existing equipment. This has enabled the sowing of crops under a wide range of conditions, including sowing into the stubble from previous crops and into pastures.

A wide range of fodder trees has been tested as part of a program to establish

multipurpose vegetation for windbreaks, fodder and aesthetic purposes. Emphasis has been given to tree lucerne (Tagasaste), a legume shrub which appears to have considerable potential for production of high quality fodder.

A technique has been developed for the control of African Lovegrass which has become a significant weed problem in the southern tablelands and south coast.

Development of biological control techniques for insect pests and weeds has continued, with further progress in the field of mycoherbicides for control of *Xanthium* spp., the use of predatory mites for mite control in pome fruit and pheromone traps for assessing populations of codling moth.

Computing facilities on research units have been greatly improved by the installation of microcomputers and the completion of a computer room at Agricultural Research and Veterinary Centre, Orange, to house the Prime computer, the hub of the Region's computer network.

Veterinary Services

Excellent progress has been made in the campaign to eradicate brucellosis with reactors down to 0.02 per cent of cattle tested.

In the earlier part of the year, pastoral conditions favoured the development of footrot in sheep. Veterinary Officers were involved with regulatory activities and an inter-regional advisory program aimed at devising control techniques suitable to a range of management strategies.

An exotic disease alert regarding imported pigeons resulted in a program of slaughter and sampling from 200 birds followed by disinfection of lofts.

Bushfires early in 1985, particularly in the south eastern part of the Region, resulted in the loss of 25 000 sheep. Veterinary and Advisory staff assessed the degree of injury to stock to permit humane destruction or treatment.

Fisheries

Two Regional Industry Consultative Committees, one representing amateur fishing bodies in the region, were formed. Inaugural meetings of both Committees were held with Regional Directors and senior Regional Fisheries staff. Regional action has been taken to rectify many of the important problems identified by these Committees.

In line with endeavours to increase advisory activity of Fisheries staff, a very well organised 'Fish in Farm Dams' field day was held at Condobolin on a large commercial hatchery. Speakers from the Department, industry and other government bodies were involved. The attendance far exceeded expectations, and further field days will be undertaken.

Construction of the Gaden Trout Hatchery Visitors' Centre was begun, together with substantial improvements to both water supply, fish rearing tanks and large ponds.

Satellite photographs help in the mapping of agricultural land suitability classes.

REGION 5 — MURRAY AND RIVERINA REGION

Conservation Farming

The Murray and Riverina Region has had various reduced tillage and acid soils research and advisory projects for some years. A current initative peculiar to this region was the formation of the Far South West Farming Systems Team comprising officers of this region, the Soil Conservation Service and cooperating farmers. The team addresses the needs of the expanding marginal western crop lands of this region and complements the Wagga Southern Conservation Group.

The Riverina sandhill irrigated potato industry supplies the bulk of the State's potato crop, with production in the hands of a few large producers. The industry is highly productive and important, but is potentially exploitative, as it leads to loss of soil fertility and soil erosion. As part of a package to ensure the sustainability of the industry, a prototype direct planting potato planter has been developed to plant into trash and thus avoid bare cultivation.

Regional Management

The Murray and Riverina Region has had an almost total change of regional management staff since regionalisation. The Regional Director of Research, E.J. Corbin, is the only Board of Management member of more than 18 months standing. During 1984-85 the Regional Administrative Officer, R.V. Mance, was replaced by B.D. Thomson; the services of the Regional Director of Advisory Services, G.A. Rance, and of the Regional Director of Veterinary Services, S.N. Carroll, were lost due to resignation and promotion respectively. The Director of Research, G.C. File, was replaced by Dr H.N. Dengate and the Director of Advisory Services position was lost to the region.

These management staffing difficulties placed pressures upon management and upon those officers supporting management. However the difficult situation did also provide opportunities for management experience for some relieving officers.

The Rice Industry

The entire New South Wales rice crop is grown and milled in the Irrigation Areas and Districts of the centre of the Murray and Riverina Region. Low rice prices, a poor medium term outlook and increasing costs of inputs coupled with an increasing farmer and community awareness of the environmental hazards potentially associated with some aspects of rice production combined to create an extremely pessimistic and aggressive outlook within the industry.

The Murray and Riverina Region continued its close research and advisory relationship with the industry.

In addition, a high level study group comprising both industry and this Department is studying the rice growing industry to provide the government with both socioeconomic and environmental advice. Other initiatives involve even closer cooperation with the Water Resources Commission to manage areas of increasing water tables; and research/advisory activities to introduce new or alternative crops such as soybeans to rice farms or to improve the efficiency of production of others such as wheat or pasture.

A major review of the structure of the whole industry and possibilities for cost reductions is being conducted by private consultants, and will be released early in 1985-86. This region has cooperated wherever possible in the study.

Inland Fisheries Research Station

The year was one of considerable progress, with the completion and opening by the Premier of the John Lake Fisheries Advisory and Education Centre being a highlight. Construction of new hatchery facilities and pond remodelling commenced. The existing facilities were used to breed some half million golden and silver perch for stocking selected New South Wales warm water streams and impoundments.

The new research thrust into endangered native fish species continued. Further brood stock were collected with the assistance of amateur angling societies. At present the mature brood stock collection is 12 trout cod and 29 Macquarie perch.

Difficult Seasonal Conditions

In common with most of New South Wales agriculture, commodity prices did not reflect the rising costs of production. This situation was made more difficult by a series of adverse seasonal conditions.

Spring 1984 was unusually mild with some October frosts. Development of horticultural crops was delayed and citrus TSS (Total Soluble Solids) was low. Irrigated wheat yields were frequently 25% below expectations. High clover levels in pasture caused bloat in cattle.

The beginning of summer saw a cessation of rain and the onset of extreme bushfire hazard.

Major bushfires started on Christmas Day, with 10 000 ha on 38 holdings east of Wagga Wagga being burnt. Later, large fires occurred in Carrathool Shire mallee and in the higher rainfall eastern section of the region in the Hume (Albury), Tumut, Wagga Wagga and Temora areas. The region provided post-fire advisory information to both affected communities and the government.

A poor autumn break allowed most crops to be sown in the east but with a poor outlook. A virtually complete lack of rain elsewhere saw the dry land sections of the region with critically low feed and stockwater supplies, and crops were either not sown or were under stress.

Trees on Farms

This project has been successfully pioneered in the Murray and Riverina Region and is now adopted as a statewide project as part of the conservation farming program. Further tree plantings involving community groups took place in arboreta at Finley and Dareton, and a new arboretum was established at Wagga Wagga. Planned additional plantings were also made on the ten cooperating farmers' properties throughout the region, and these sites were used for advisory purposes.

The Murrumbidgee College of Agriculture conducted live-in 'Trees on the Farm' short courses in conjunction with the Forestry Commission and Soil Conservation Service for 25 landholders.

APPENDIXES

APPENDIX I Diagnostic and Testing Services

Plant Health Diagnostic Services
During the year, 2948 plant specimens were examined for diseases and 501 for parasitic nematodes. More than 50 plant diseases were recorded for the first time in New South Wales and 1791 specimens were added to the Biology Branch Herbarium (Herb. DAR). Outside organisations were supplied with 103 living cultures and 108 specimens were loaned from Herb. DAR. Also, 31 sets of exsicatti were distributed to overseas herbaria from Herb. DAR.

Australian Inoculants Research and Control Service
This service was established and is financed by the Australian Agricultural Council to control the quality of legume inoculants prior to release and to test the standard when available to retail outlets in all states. A total of 389 cultures were tested during production, and of these 318 were passed. Of the 167 packeted inoculants tested from retail outlets, 149 reached the necessary standard.

B.C.R.I. Chemistry Branch
Analytical tests conducted

Analysis	Number of samples	Number of analyses
Stock food analysis	416	995
Pesticide analysis	1021	4316
Reports on pesticide formulation and residue analysis		100
Soil physical analysis		
advisory	1293	7319
research	77	240
total	1370	7559

Reports on soil physical/irrigation suitability	
Soil chemical analysis	
advisory	8 094
research	2 011
total	10 105
Plant analysis	
advisory	2 849
research	1 052
total	3 901
Water analysis	
advisory	1 203
research	60
total	1 263
Fertiliser analysis	
Fertilisers analysed	65
Lime samples analysed	22
Gypsum samples analysed	51
Mushroom compost	130

Essential Oils Laboratory, Wollongbar

Oils distilled for industry	29
Oils distilled for research	58
Oils analysed for industry	73
Oils analysed for research	40

Table 1. Origin and Source of Specimen Consignments Other Than Those Directly Concerned with the Brucellosis Eradication Campaign — 1984-85

Animal	Regional Veterinary Laboratories					Central Veterinary Laboratory	Total (percentage)	
	Armidale	Glenfield	Orange	Wagga	Wollongbar			
Sheep	1 111	750	1 363	1 187	52	1 056	5 719	(19.2)*
Cattle	1 426	2 907	922	881	1 641	5 635	13 412	(46.6)
Pigs	216	175	257	249	195	412	1 504	(5.2)
Poultry	207	0	129	95	111	923	1 465	(5.1)
Goats	126	520	119	110	389	1 239	2 503	(8.7)
Horses	238	457	232	99	457	256	1 739	(6.0)
Other Species	534	644	275	271	542	187	2 453	(8.5)
Other Specimens	28	63	47	8	13	5	164	(0.7)
Total	3 886	5 516	3 344	2 900	3 400	9 713	28 759	(100.0)

* Expressed as a percentage of the total number of submissions.

Source	Regional Veterinary Laboratories					C.V.L.* Glenfield	Total (percentage)	
	Armidale	Glenfield	Orange	Wagga	Wollongbar			
Private Practitioners	1 729	2 545	1 502	1 564	2 015	—	9 355	(49.1)†
Veterinary Inspectors	1 161	926	839	711	522	—	4 159	(21.8)
Departmental Officers	791	1 308	903	623	863	—	4 488	(23.6)
Others	205	737	100	2	0	—	1 044	(5.5)
Total	3 886	5 516	3 344	2 900	3 400	—	19 046	(100.0)

* See Table 3.
† Expressed as a percentage of the total number of submissions to the Regional Laboratories.

Table 2. Number of Serum Samples Received for Tests Under the Bovine Brucellosis Eradication Program

Eradication Testing	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Glenfield	948 020	479 330	1 324 070	1 076 960	356 805	307 290	296 220	354 467
Armidale	737 110	988 190	758 150	385 400	391 210	241 690	373 440	274 375
Orange	—	—	—	208 207	684 480	313 920	329 180	303 931
Wagga Wagga	17 760	232 190	866 690	657 350	438 460	256 830	239 120	217 782
Wollongbar	1 029 200	923 040	463 680	265 910	241 330	205 760	221 670	219 891
Total	2 732 790	3 622 750	3 442 590	2 593 827	2 112 285	1 325 490	1 459 630	1 370 446
Abattoir Monitoring	**1977-78**	**1978-79**	**1979-80**	**1980-81**	**1981-82**	**1982-83**	**1983-84**	**1984-85**
Glenfield	295 490	297 640	255 630	206 080	121 830	130 590	99 230	94 162
Armidale	110 100	134 700	189 780	236 650	105 000	128 850	44 270	104 047
Orange	—	—	—	3 020	58 630	101 930	45 270	28 058
Wagga Wagga	26 290	15 430	18 190	21 840	28 660	24 210	11 030	16 952
Wollongbar	103 600	112 390	83 830	129 630	115 270	164 750	127 760	133 406
Total	535 480	560 160	547 430	597 220	429 390	550 330	327 560	376 625
TOTALS	3 268 270	4 270 820	3 990 020	3 191 047	2 607 675	1 875 820	1 787 190	1 747 071

Table 3. Number of Specimens Referred to the Central Veterinary Laboratory and the Serology Section, Regional Veterinary Laboratory (Glenfield) by the Regional Veterinary Laboratories or Received Direct — 1984-85.

	Biochemistry	Mastitis	Microbiology	Parasitology	Poultry	Virology	Serology	Total
Armidale	82	3	19	0	9	139	29	281
			(17)*	(0)	(6)	(212)	(25)	(347)
Glenfield	617	33	361	0	2	1 134	0	2 147
	(413)	(36)	(287)	(0)	(0)	(690)	—	(1 426)
Orange	152	0	86	0	1	229	46	514
	(181)	—	(92)	(0)	(1)	(206)	(42)	(512)
Wagga Wagga	176	0	77	0	48	218	297	816
Wollongbar	195	25	89	0	6	275	76	76
	(258)	(40)	(47)	(0)	(9)	(232)	(15)	(601)
Direct	285	2 044	69	413	841	0	1 637	5 289
	(308)	(2 125)	(33)	(369)	(869)	(0)	—	(3 704)
Total	1 507	2 105	701	413	907	1 995	2 085	9 713
	(1 419)	(2 201)	(539)	(369)	(890)	(1 500)	(431)	(7 349)

* Numbers in parentheses are 1983-84 figures.

Table 4. Number of Specimens Received by the Different Sections of the Central Veterinary Laboratory and the Serology Section, Regional Veterinary Laboratory (Glenfield), Arranged by Species — 1984-85.

	Biochemistry	Mastitis	Microbiology	Parasitology	Poultry	Virology	Serology	Total
Cattle	957	2 090	244	130	0	1 041	1 173	5 635 = 58%†
	(813)*	(2 201)	(186)	(151)	—	(861)	(260)	(4 474)
Sheep	309	0	142	127	0	123	355	1 056 = 10.9%
	(369)	—	(103)	(58)	—	(127)	(132)	(789)
Pigs	16	0	62	16	0	234	84	412 = 4.2%
	(24)	—	(49)	(10)	—	(182)	(30)	(295)
Poultry	0	0	6	0	907	10	0	923 = 9.5%
	(11)	—	(11)	(0)	(890)	(7)	—	(917)
Goats	165	15	225	89	0	370	375	1 239 = 12.8%
	(135)	—	(176)	(98)	—	(213)	(9)	(631)
Horses	20	0	3	14	0	197	22	256 = 2.6%
	(17)	—	(1)	(19)	—	(95)	—	(132)
Other Species	40	0	14	37	0	20	76	187 = 1.9%
	(40)	—	(8)	(33)	—	(15)	—	(96)
Other Specimens	0	0	5	0	0	0	0	5 = 0.05%
	(10)	—	(5)	(0)	—	—	—	(15)
Total	1 507	2 105	701	413	907	1 995	2 085	9 713 = 100%
	(1 419)	(2 201)	(539)	(369)	(890)	(1 500)	(431)	(7 349)

* Numbers in parentheses are 1983-84 figures.
† Expressed as a percentage of the total number of specimens received at the CVL.

APPENDIX II Summary of Department's Regulatory Activities Under Various State and Commonwealth Acts

A. STATE ACTS

Horticultural Stock and Nurseries Act, 1969

Nurserymen registered	3 030
Resellers registered	2 309

Plant Diseases Act, 1924

Notices issued for pest and disease control	475
Prosecutions	22
Inspections	
Orchards, plantations, vineyards	
— For advice/regulatory action	8 525
— For planting statistics only	1 442
Fruit shops and stalls	4 732
Grain storages and processing premises	596
Nurseries	2 547
Resellers	2 792
Home gardens	26 401
Detections of bunchy top in banana plantations	1 166

Packages detained at markets for non-compliance with regulations

	Packages	*Bulk bins*
Apples	33 303	199
Pears	21 424	17
Citrus	19 619	48
Grapes	1 283	
Rockmelons	5 153	
Tomatoes	11 151	
Potatoes	68 859	79
Bananas	44 041	
Mangoes	1 413	
Stone Fruit	43	
Avocados	1 963	
Lettuces	719	
Carrots	1 623	
Pumpkins	492	14
Onions	11 060	
Total	222 146	357

Packages castaway (under Farm Produce Act)	3 400

Potato Growers Licensing Act, 1940

Growers licensed	335

Cattle Compensation Act, 1951

Compensation was paid for 2814 cattle ordered to be destroyed because of suspected disease, and for three carcases condemned during meat inspection.

Diseases on which claims were paid

Diseases	Claims	Cattle & Carcases
Brucellosis	292	1054
Tuberculosis	214	1102
Johne's Disease	20	28

Poultry Processing Act, 1979

The Poultry Processing Industry continued to expand with an increase of 10 new registrations (3 quail, 4 broiler and 3 further processors).

Statistics

Number of Registered Plants	118
Number of Inspection Visits	1830
Number of Water Retention Tests	297
Number of Prosecutions	Nil
Number of Plants not seeking re-registration 1985-86	2

Unlicensed Premises

There were four investigations into unlicensed processing activities during the year, with the result that two processors were registered, one backyard operation was closed down, and one investigation is continuing.

Bovine Brucellosis in New South Wales 1984-85

Total herds	55 532
Dairy herds	2 895
Monitoring Abattoirs	
Blood samples	343 682
Positive bloods	34
Confirmed reactors (per cent)	0
Herds in which positives were found	34
Milk Ring Testing	
Herd checked	2 895
Positive MRT herd tests	25
MRT positives in previously negative herds	21
Miscellaneous Field Testing	
Herds tested	2 378
Cattle tested	39 624
Reactors	223
Total Monitoring	
Herds tested	33 232
Herds positive	146
Cattle tested	383 306
Reactors	257
Eradication	
Herds tested during year	18 468
Blood samples tested	1 329 090
Reactors	273
Disposal of Reactors	
Reactors for which compensation paid	1 054
Net compensation paid	$209 361
Vaccination	
Cattle vaccinated with Strain 19	0
Doses of Strain 45/20 used	0

Infection data progress to 30th June 1984

Herd Status	*No.*	*per cent*
Not assessed	669	1.2
Suspect	21	0.0
Infected	87	0.2
Restricted	53	0.1
Provisionally clear	91	0.2
Tested negative	852	1.5
Monitored negative	107	0.2
Confirmed free	53 622	96.6
Accredited free	30	0.1
Prevalence (per cent)		
Herd		0.16
Individual		0.01

Bovine Tuberculosis in New South Wales 1984-85

A. Basic statistics	
1. No. of cattle herds	66 115
2. No. of cattle	5 288 096
B. Monitoring	
1. Abattoirs	
(a) No. of cattle slaughtered	1 483 277
(b) No. with suspect TB lesions	28
(c) No. with confirmed TB lesions from herds under eradication (NA, IN, RD, SU, PC)	0
(d) No. with confirmed TB lesions from free herds	4
(e) No. successful tracebacks to herd of origin	4
(f) Percentage of successful tracebacks to the property of origin	100
(g) No. of herds tested from abattoir monitoring	10
(h) No. of herds determined to be infected following abattoir monitoring	0

2. Testing

(a) No. herds tested	1 991
(b) No. cattle tested	234 924
(c) No. of herds determined to be infected from testing/monitoring	3

C. Eradication

1. No. of herds tested	27
2. No. of cattle tested	20 780

D. Disposal of reactors

1. No. reactors slaughtered	344
2. No. reactors autopsied (abattoir and field)	344
3. No. reactors autopsied with lesions	14

E. Laboratory

1a. No. of cattle with TB lesions from abattoir monitoring for laboratory examination	33
1b No. cattle positive	5
2a. No. of tuberculin reactors with no lesions for bacteriological examination	40
2b. No. reactors positive	6
3a. No. of tuberculin reactors with no lesions for bacteriological examination	28
3b. No. reactors M. bovis positive	0

F. Infected herds

1. No. of herds determined to become infected during the year	3
2. No. of infected herds at the end of the year	2
3. No. cattle on infected herds at the end of the year	1 351

G. Prevalence

1. Herd	0.003%
2. Individual prevalence	0.00008%
3. Apparent Annual Area Prevalence	0.0003%

Board of Tick Control

The Board of Tick Control Laboratory examined 28 564 samples.

Dip analysis

Chemical analyses	13 194
pH determinations	2 044

Pesticide residue survey

Animal fat samples	10 727
Wool samples	646

Residue development

Samples	1 953

Stock Medicines

Products analysed	92
Products sampled	98
Registrations	237
Re-registrations	1 871
Refused	1
Prosecutions	2

Swine Compensation Act, 1928

Compensation was paid for eight carcases condemned during meat inspection because of septicaemia, and for 312 carcases condemned because of tuberculosis.

Veterinary Surgeons Act, 1923

Registrations with the Veterinary Surgeons Board increased by 55 to 1589 as at 30th June 1985. This involved 118 new registrations, 25 restorations and 88 removals from the register.

The Veterinary Surgeons Investigation Committee investigated 27 complaints alleging professional misconduct. Twenty-four of these complaints were dismissed, two veterinarians were reprimanded, and one complaint was referred to the Veterinary Surgeons Disciplinary Tribunal.

The number of licensed Veterinary Hospitals increased to 447, with 226 in the Sydney Metropolitan area. Licences issued were 100 ClassA, 261 Class B and 86 Class C.

All except 18 premises have been inspected, 146 having minor deficiencies to correct.

A further 55 unlicensed premises are known: 23 of these have failed inspection, and the balance are yet to be inspected.

No prosecutions were launched against Veterinary Surgeons during the year.

Stock (Artificial Insemination) Act, 1948

	Cattle	Sheep	Pigs
Premises licensed as at 30th June:			
Centres	3	4	0
Sub-centres	7	2	1
Certificates of Competency Issued to 30th June	200	4	

Stock (Chemical Residues) Act, 1975

Samples of fat collected from cattle slaughtered at abattoirs and slaughter houses were analysed for the presence of chemical residues. In all, 7097 samples were taken, 6649 of these were analysed, and 5828 (88 per cent) of all samples were free of residues. Only 67 samples contained significant levels, with only 22 above the maximum residue level.

Stock Diseases Act, 1923

Quarantine was applied for the following diseases

	Number Quarantined	
Disease	Properties	Stock
Anthrax	10	6 786
Lice in sheep	929	1 306 742
Ked in sheep	1	600
Tuberculosis in cattle	3	1 351
Tuberculosis in pigs	4	N/A
Tuberculosis in poultry	4	N/A

Prosecutions

A total of thirty-four persons, involving 62 charges, were prosecuted, resulting in fines totalling some $11,700. Offences involved in these prosecutions included:

	Persons	Charges	Fines
			$
Lice in sheep	11	17	6098
Footrot in sheep	4	4	1368
Brucellosis in cattle	1	1	1600
Swill feeding of pigs	1	1	1018
Tail tagging of cattle	1	2	253
Queensland border crossings	8	15	2700
Swine branding	1	1	100
Stock medicine	3	4	558
Tuberculosis in cattle	1	2	1118
Withdrawn cases	8	15	

Apiaries Act, 1916

Apiarists registered (31.3.85)	4553

Chicken Meat Industry Act, 1978

Agreements registered	460
Disputes	4

Registration of Stock Brands Act, 1921

Applications	1048
Transfers	217
Searches	590
Re-gazettal	72

Stock Diseases Act, 1923

Swine brands registered (30.6.85)	6962

Stock Foods and Medicines Act, 1940

Registrations 1984-1985	728
Products sampled	341
Stock foods analysed	341
Number of analyses	877
Stock medicines analysed	92
Number of analyses	119

Fertilizers Act, 1934

Fertilisers registered	542
Fertilisers analysed	93
Fertilisers refused	3

Pesticides Act, 1978

Registration assessments	14
Samples analysed	34

During the year ended 30th June 1985 the Pesticides Registration Section received 295 applications for registration of new products under the Act; 367 applications for registration of additional labels for registered products; and 133 applications for approval of additional containers.

In addition, 230 applications for issue of permits under the Act were received.

B. COMMONWEALTH ACTS

Export Control Act *1982*

	Tonnes	
Grain exported	*Inspected*	*Rejected*
Ships surveyed for grain export (number)	156	48
Wheat	4 354 720	12 407
Rice	105 083	—
Barley	262 081	16 700
Malt barley	9 214	—
Sorghum	117 302	100
Oats	21 437	—

	Packages	
Fresh fruit and vegetables exported	*Inspected*	*Rejected*
Apples	68 609	6136
Pears	35 748	1883
Citrus	135 452	9853
Stone fruits	133 417	4202
Grapes	159 368	9998
Strawberries	9 013	1534
Pineapples	2 146	36
Mangoes	36 205	1966
Rockmelons	96 667	4277
Tomatoes	71 416	1881
Other fruits	55 646	119
Potatoes	27 179	320
Onions	38 685	1814
Other vegetables	284 440	6537

General	*Exported*
Safflower seed	771 Tonnes
Vegetable seed	25 274 Pkgs
Palm seed	2 765 Pkgs
Plants	13 650 Pkgs
Pasture seed	14 631 Pkgs
Maize seed	1 568 Bags
Nuts	6 721 Cartons
Nuts — pecan	2 694 Tonnes
Empty containers	3 138 Containers

Quarantine Act *1908*

Prosecutions: various Acts	211
Total quarantine fee collected	$2 206 793
Passenger Clearance	
By sea:	
Vessels serviced	91
Passenger arrivals	88 410
Quarantine referrals	35 430
Quarantine interceptions	958
By air:	
Flights serviced	8 217
Passenger arrivals	1 471 162
Quarantine referrals	247 365
Quarantine interceptions	19 737
Parcels Post	
Parcels referred for examination	46 093
Parcels requiring quarantine action	4 284
Import Permits Issued	65 992
Cargo Container Clearance	
Vessels discharged Sydney & Port Botany	810
Containers discharged	195 567
F.C.L.*s for immediate delivery	109 506
F.C.L.s & L.C.L.s inspected at depots	86 061
F.C.L. follow up inspections	800
Infringements revealed	21
Vehicles Steam Cleaned	284
Seed lines sampled for examination	534
Richmond RAAF Base–Personal Effects (Tonnes)	362
Timber Imports (cubic metres)	591 796
Timber quarantine treated (cubic metres)	17 192
Approved premises for processing	240

* F.C.L.: full container load; L.C.L.: less than container load

Interceptions of Pests Detected During Quarantine Inspections

A total of 1274 interceptions of insects and allied fauna were made during the year. Listed below are some of the more interesting records of exotic pests.

Name of Pest	Number of Occasions Intercepted
Khapra beetle, *Trogoderma granarium*	1
Trogoderma sp. — exotic unknown species	1
Woodwasp, Siricidae, *Sirex juvencus*	1
Carpenter Ants, *Camponotus pennsylvanicus*	1
Citrus Fruit Miner, Gracillaridae, *Mamara* sp.	1
Fruit Fly, *Tephritidae*	1
Olive Fruit Fly, *Dacus oleae*	1
Pacific Dampwood Termite, *Zootermopsis angusticollis*	3
Giant African Snail, *Achatina fulica*	3
Other molluscs, including snails and slugs	11

Of particular interest was one interception of Giant African Snail which included 33 live specimens and 6 dead specimens.

Nursery Stock Imports

Ornamentals to approved quarantine houses & Plant Quarantine Station	51 571
Number of lines being:	
Seeds for Department and universities	648
Seeds for private importers	41
Fruit trees for Department	2
Other imports for Department	11
Plants for private importers	63 507
Total to Plant Quarantine Station	2 563

Animal Imports

Landing permits issued	1 499
Animals landed	
Domestic livestock	989
Animal pets	1 312
Aquarium fish	2 330 798
Bees	10
Others	262

Animals entering quarantine	
Dogs and cats	544
Horses and donkeys	136
Semen imported	
Cattle (doses)	36 074
Ship pets	
Animals bonded	328
Fish bonded	596
Prohibited materials seized	
Meat and meat products (kg)	1 530
Cheese (kg)	456
Milk products (kg)	1 071
Eggs	1 637
Egg products (kg)	614
Rawhide pieces	825
Salmon/trout (kg)	650

Animal Products Imported

	kg
Animal Protein Meals	3 846 139
Bakery Products	564 649
Biological Material	67 029
Casings	906 688
Cheese	10 640 947
Egg Products	247 701
Feathers	82 931
Fish Products	9 543 399
Furred Skins	9 292
Glue Pieces	118 357
Hides and Skins	1 978 999
Hair	471 504
Chilled Meat	3 771 231
Tinned Meat	1 486 865
Milk Products	2 501 958
Noodles	2 682 078
Saddlery and Stalls	4 675
Stock Food	8 876 211
Trophies and Museum Pieces	64
Tallow	34 056
Wool	939 022
Miscellaneous	766 363

Animals Exported

Health Certificates Issued	1 238
Export Fees Collected	$57 862
Animals Exported	
Domestic livestock	4 084
Animal pets	1 861
Birds/poultry	274
Day old poultry	276 401
Hatching eggs	642 860
Fish/Fish ova	157 814
Others	1 622

APPENDIX III Accounts of Department of Agriculture for the Financial Year 1984-85

The cost of maintaining the Department of Agriculture is met from the Consolidated Fund Recurrent Expenditure Account, whilst capital expenditure on buildings, equipment and permanent improvements to departmentally owned property is a charge against the Consolidated Fund Capital Expenditure Account.

In addition to these sources of funds, the Department is assisted in financing certain research and development programs, and controlling insect pests and animal diseases, by levies on industry and grants from the Commonwealth, and Semi-Government, Public and Private Organisations. Operations in this category are reflected in the large number of accounts within the classification of 'Special Deposits' Accounts. The operations on some of the more significant Special Deposits Accounts are detailed later in this report.

Comparative Statement of Expenditure

Account	1983-84	1984-85	Variation
	$	$	$
Consolidated Fund Recurrent Expenditure	101,836,000	108,019,000	6,183,000+
Consolidated Fund Capital Expenditure	800,000	3,779,000	2,979,000+
Special Deposits Accounts	50,141,000	42,215,000	7,926,000−
Total	151,777,000	154,013,000	2,236,000+

Reflected in the Special Deposits Accounts balance is the reduction in the Commonwealth Fodder Subsidy Scheme payments from $8,504,000 in 1983-84 to $52,000 in 1984-85, due to the breaking of the drought. This reduction, plus an increase of $2,979,000 for capital works and increased Consolidated Fund Recurrent Expenditure of $6,183,000, accounts largely for the net variation of expenditure over 1983-84.

FINANCIAL SUMMARY — 1984-85

Departmental

The Department of Agriculture's main funding comes from the State Treasury in the form of an allocation from the Consolidated Fund Recurrent Expenditure Account. Receipts from the administration of various Acts of Parliament, as well as contributions from the Commonwealth towards certain specified functions, are paid into the Consolidated Fund Recurrent Receipts Account. Expenditure during 1984-85 by the Department of Agriculture totalled $108,019,000 from the Consolidated Fund Recurrent Expenditure Account, while revenue paid into the Consolidated Fund Recurrent Receipts Account amounted to $12,751,000. This expenditure of $108,019,000 financed such functions as:

Agricultural Advisory Services and Research $27,913,000
Cattle Tick Control $10,153,000
Fisheries Operations $8,553,000
Plant Industry Regulation and Biological and Chemical Research $24,939,000

Advisory Services and Applied Research

Funds provided by Industry Bodies, Semi-Government Authorities, Private Companies and the Commonwealth Special Research Grants are utilised to fund many research programs and some advisory services conducted by the Department of Agriculture. The Department relies heavily on these sources of finance for research work, which provided $6,014,000 in 1984-85. Expenditure for the year from these sources was $4,798,000.

Capital Works Program

Funds for the Department's capital works program are provided from the State Treasury's Consolidated Fund Capital Expenditure Account. Expenditure during 1984-85 on capital works was $3,779,000 from this source.

Drought Relief Payments

Drought Relief payments during 1984-85 were greatly reduced due to the break in drought conditions. Payments made were from State Treasury funds provided from the Consolidated Fund Recurrent Expenditure Account amounting to $524,000 and from Commonwealth Government funds in the form of the Fodder Subsidy Scheme payments of $52,000.

Consolidated Fund Recurrent Expenditure 1984-85

The following is a comparative statement of expenditure from the Consolidated Fund Recurrent Expenditure Account for the previous two financial years:

Budget Headings	1983-84	1984-85	Variation
	$	$	$
Administration	14,421,000	16,157,000 (a)	1,736,000+
* Plant Industries	23,677,000	24,939,000 (b)	1,262,000+
* Agricultural Support Services	26,453,000	27,913,000 (c)	1,460,000+
Animal Health and Production	19,892,000	20,304,000	412,000+
Cattle Tick Control	9,596,000	10,153,000 (d)	557,000+
Fisheries	7,797,000	8,553,000	756,000+
	101,836,000	108,019,000	6,183,000+

* These two budget headings in 1984-85 amalgamate headings shown separately in 1983-84 as follows:

	1983-84
	$
Plant Industries	
Biological and Chemical Research Institute	5,718,000
Plant Industries	17,959,000
	23,677,000
Agricultural Support Services	
Research Services	14,811,000
Advisory Services	11,642,000
	26,453,000

The main areas of increase are:

(a) Administration

(i) Operating expense items such as Workers' Compensation Insurance, Gas and Electricity, Postal and Telephone, Stores and Printing and Stationery increased by a total of $1,566,000, reflecting increased costs and continuation of departmental policy towards computerisation.

(ii) The Department's grant to the New South Wales Meat Industry Authority was increased by $215,000 as a repayable loan to the Treasury.

(b) Plant Industries

(i) Salaries costs increased by $1,000,000 due to award increases and increased staff numbers.

(ii) Supplementation to the Prickly-Pear Destruction Fund was increased by $135,000 in 1984-85 to cover cost increases including an additional $50,000 for increased Workers' Compensation insurance premium.

(iii) Commerce (Trade Descriptions) Act Expenses increased by $302,000, reflecting increased inspection services performed under this Act on behalf of the Commonwealth due to the continued rise in grain exports after the drought years.

(iv) Plant Quarantine Expenses increased by $164,000 to cover cost increases and a rise in level of services required and reimbursable by the Commonwealth.

(v) An emergency grant made for the Destruction of Noxious Weeds in 1983-84 was not repeated this year, reducing 1984-85 expenditure by $380,000.

(c) Agricultural Support Services

(i) The major expenditure increase was in salary costs of $1,745,000 as a result of award increases and transfer of staff numbers from other areas. This reflects departmental policy changes of a greater emphasis towards pesticide control and provision of advisory services.

(ii) Net savings of $115,000 were made on operating expenses, and a net saving on other service items of $170,000 was mainly attributable to an expenditure reduction of $146,000 on the New South Wales participation in China Cooperative Agricultural Projects.

(d) Cattle Tick Control

(i) An outbreak of cattle tick in Grafton, which is well south of the recognised tick quarantine area, resulted in emergency control expenditure of $181,000.

(ii) New policies announced by the Premier in February 1985 included the creation of a buffer zone along the Queensland border and the re-introduction of compulsory cattle dipping. This change in policy involved additional expenditure of $364,000 in 1984-85.

Consolidated Fund Capital Expenditure 1984-85

	$
Biological and Chemical Research Institute, Rydalmere — Re-roofing	292,225
Murrumbidgee Agricultural Institute — Short Course Centre	1,465,646
Gaden Trout Hatchery, Jindabyne — Tourist Facilities and Water Supply	205,150
Dutton Trout Hatchery, Armidale — Tourist Facilities	1,074
Horticultural Research Station, Gosford — Office and Laboratory Extensions	222,608
Agricultural Research Complex, Camden Park — Development of Central Veterinary Laboratory Site	281,031
Brackish Water Fish Culture Research Station, Port Stephens — Oyster Hatchery	938
Tamworth Agricultural Research Centre — Building Extensions	9,234
Fisheries Office, Lake Illawarra — Office and Boatshed	42,000
Purchase of Plant and Equipment — Department of Agriculture	1,259,350
Total Expenditure 1984-85	3,779,256

The 1984-85 allocation for the Department of Agriculture from the Consolidated Fund Capital Expenditure Account was $4,452,000, compared to the 1983-84 allocation of $800,000.

Statement of Receipts: Consolidated Fund Recurrent Receipts Account for the Year Ended 30th June 1985

Receipts for Services Rendered	$
Rents	579,121
Fees — State Acts	
Apiary Registrations	44,112
Farm Produce Agents	19,650
Fertilizers Act	26,600
Registration of Pesticides	95,460
Poultry Processing Act	163,787
Stock Brands Registrations	28,619
Swine Brands Registrations	49,241
Stock Foods and Medicines Act	294,006
Veterinary Surgeons Act	84,713
Registration of Veterinary Hospitals	29,927
Broiler Growing Agreements	27,420
Ovine Brucellosis Accreditation	26,951
Fisheries and Oyster Farms Act	635,862
Contributions from Commonwealth	
Administration of Commerce (Trade Descriptions) Act	1,118,925
Laboratory on Dairy Detergents and Sanitisers	1,034
Administration of Plant Quarantine	2,779,608
Administration of Animal Quarantined	935,635
Export Certification of Livestock	200,000
Administration of Commonwealth Fisheries	302,446
CSIRO for Cotton Research	58,784
Apprentices' full time training scheme	32,008
Fees — Services Rendered	
Inspections — Plant Diseases Act	158,881
Herd Recording	777,083
Seed Certification and Testing	89,518
Cattle and other Testings	105,727
Miscellaneous Receipts for Services Rendered	231,662
Dipping	22,161
Farm Management and other Information Schemes	7,482
Administration Costs — T.B. & B. Eradication Campaign Working Account	373,034
Reimbursement — China Projects	87,256
Administration Costs — Cattle Compensation Fund	61,096
Administration Costs — Swine Compensation Fund	11,281
Inspections — Meat Industry Act	25,444
Reimbursement Livestock Market Reporting Service	149,474
Collecting Commission	27,515
Total — Receipts for Services Rendered	9,661,523

General Miscellaneous Receipts	$
Fines and Forfeitures (including Bond Liabilities)	24,919
Sales and Services — Graham Park Breeding Service	538,999
Repayment to Credit of previous years vote	99,932
Interest	1,626
Sale of Farm Produce	1,228,644
Sale of Government Property	76,277
Employers' Liability to State Superannuation Fund	715,891
Miscellaneous Unclassified Receipts	81,501
Sale of Publications	117,891
Fees — Public Officers	2,940
Stamp Duty — Oyster Lease Documents	325
On-Costs in Respect of Officers on Loans	200,589
Total — Miscellaneous Receipts	3,089,534
Total Receipts — Department of Agriculture — 1984-85	12,751,057

Special Projects or Services Within the Department
Transactions on some of the more significant Special Projects or Services within the Department's operations during 1984-85 are detailed in the following section.

Graham Park Breeding Services, Berry
From 1st July 1980 the operations of the Artificial Stock Breeding Service, Berry, transferred from the control of the Dairy Industry Marketing Authority of New South Wales to the Department of Agriculture. The Service was subsequently renamed Graham Park Breeding Services. Details of income and expenditure for the year ended 30th June 1985 are as follows:

Income	$	$
Receipts	538,999	
Sale of Goods Working Account	34,202	
Consignment Semen Working Account	43,300	616,501
Expenditure		
Salaries and Payments in the nature of Salaries	346,593	
Subsistence and Transport Expenses	32,341	
Stores	84,842	
General Operating Expenses	147,684	
Plant and Equipments	9,128	
Purchase of Motor Vehicles	21,853	
Purchase of Bulls	34,600	677,041
Deficit		(60,540)
Less: Other Income		
Sale of Government Property		25,058
Net Deficit of Expenditure over Income for 1984-85		(35,482)

As at 30th June 1985 outstanding debtors totalled $100,737 whilst commitments amounted to $44,716.

Special Employment Schemes
The Department of Agriculture participated in the following Employment and Training Programs during 1984-85.

Employment/Training Program	Expenditure
	$
Special Scheme to Promote Youth Employment and Employment Generally — State Apprenticeship Scheme	137,128
Special Schemes to Promote Youth Employment and Employment Generally — State Youth Corps	1,051
National Employment Strategy for Aboriginals	233,045
Community Employment Program (C.E.P.)	7,139,647
Youth Employment Scheme (Y.E.S.)	1,297,438
New South Wales Technical Jobs for Women	90,025
	$8,898,334

Australian Development Assistance Bureau Working Account
The finance for Australian Development Assistance Bureau projects is provided by the Commonwealth. In addition to providing technical expertise and advice, the projects in various countries are managed by departmental personnel. Details of the operations of the Special Deposits Account for the assistance are given below for the year ending 30th June 1985.

Collections	$	$
Balance transferred 1st July 1984		402,074
Receipts during the year — 1984-85		319,160
Advances — Miscellaneous Projects (unexpended)		99,344
		820,578
Less Expenditure		
Salary & Allowances	104,922	
Travelling Expenses	33,161	
Materials & Equipment	220,956	
Other Expenses	57,452	
Overhead Expenses	40,950	457,441
Balance as at 30th June 1985		363,137

All the above expenditure relates to the Sri Lanka — Lower Uva Phase II Project.

Australian Inoculants Research and Control Service — Working Account

The Australian Inoculant Research and Control Service (A.I.R.C.S.) came into being in 1970 with the approval of the Agricultural Council for the specific purpose of maintaining quality control in legume inoculants. It succeeded the University of Sydney — Department of Agriculture Laboratory Service (U.D.A.L.S.) which began in 1956. U.D.A.L.S. was set up because many sowings of pasture legumes were failing because of poor nodulation.

A.I.R.C.S. was initially housed at the Biological and Chemical Research Institute, Rydalmere, and was moved to the Horticultural Research Station, Gosford, in 1973.

Following is a statement of receipts and payments for the above account for the year ended 30th June 1985.

	$	$
Balance as at 1st July, 1984		12,265
Receipts		
Contribution from:		
New South Wales	14,486	
Queensland	7,170	
South Australia	10,536	
Tasmania	1,024	
Victoria	8,926	
Western Australia	16,389	
Industry Sources	6,930	65,461
		77,726
Payments		
Salaries	51,300	
Operating Expenses	8,813	60,113
Balance as at 30th June 1985		17,613

Cattle Compensation Fund

The Cattle Compensation Act, passed in 1951, provides compensation to cattle owners who sustain losses when their cattle are ordered to be slaughtered, or when carcases are condemned, on account of certain diseases. In this way the fund supports necessary disease control measures, by helping owners who would otherwise suffer financial loss.

Diseases covered at present by the Cattle Compensation Act are brucellosis, tuberculosis, Johne's disease, tick fever and trichomoniasis.

	$	$
Balance as at 1st July 1984		4,043,004
Receipts		
Interest	397,550	
Stamp Duty	133,654	
Commonwealth Contributions	304,074	835,278
		4,878,282
Payments		
Compensation:		
National Brucellosis	209,361	
National Tuberculosis	463,937	
Johne's Disease	7,551	
Other Payments	32,225	
	713,074	
Administration Costs of Department of Agriculture	61,096	774,170
Balance in fund at 30th June 1985		4,104,112

The above closing balance includes investments currently held with the Treasury of $4,000,000.

Cattle Compensation Payments 1984-85

	Disease Group				
	Brucellosis	Johne's Disease	Tuberculosis	Other Claims	Total
Number of Claims	292	20	214	69	595
Number of Animals	1,054	28	1,102	95	2,279
Payment Details	$209,361	$7,551	$463,937	$32,225	$713,07

Eradication of Bovine Tuberculosis & Brucellosis — Working Account

This account was established to reflect the contributions and expenses of a joint campaign with the Commonwealth directed at the eradication of tuberculosis and brucellosis in cattle.

	$	$
Balance in fund at 1st July 1984		*345,767*
Income		
Contributions by New South Wales		2,400,000
Contributions by Commonwealth		6,128,753
Fees for Services Rendered		2,831
Sale of Assets		520
		8,877,871
Expenditure		
Salaries, wages and associated charges	6,333,697	
Travelling expenses	82,557	
Motor vehicle running costs	391,380	
Postage and Telephone	214,838	
Freight and Cartage	68,965	
Stores and Equipment	440,730	
Office Requisites and Printing	41,589	
Rent and Rates	185,207	
Repairs and Maintenance	20,419	
Cattle Tags	49,569	
Computer Running and Maintenance	50,307	
Payments to Private Practitioners for:		
Brucellosis Sampling	23,478	
T.B. Testing	346,561	
Administration costs	215,528	
Purchase of Capital Plant and Equipment	78,770	
Purchase of Motor Vehicles	191,123	
Land, building and improvements	2,689	
Other Expenses	62,841	8,800,248
		77,623

Against the balance of $77,623 quoted above, must be considered firm commitments of $128,892.
This commitment is made up of:

Replacement Motor Vehicles	37,199
Stores, Equipment and Administration costs	91,693
	$128,892

The Commonwealth's contribution for 1984-85 was $2.55 for each $1 contributed by the State.

Noxious Insects Destruction Account

The Noxious Insects Act provides for the striking and collection of a levy to meet the cost of suppression and destruction of plague locusts and grasshoppers. The Noxious Insects Destruction Account was established to record the receipt of levies effected by the Pastures Protection Boards and the suppression expenses.

The following is a financial statement of the operations of this account for the 1984-85 financial year.

	$	$
Balance as at 1st July 1984		925,424
Receipts		
Levies	1,092,859	
Sale of Assets	30,315	1,123,174
		2,048,598
Payments		
Purchase of Insecticides	245,780	
Hire of Helicopter/Aircraft	73,034	
Travelling Expenses	15,420	
Stores, Materials	5,603	
Motor Vehicle Running Costs	12,872	
Equipment Purchases	1,611	
Motor Vehicle Purchases	—	
Maintenance and Repairs to Equipment	2,658	
Salaries and Wages	42,581	
Repayment of Treasury Loan	362,000	
Contribution to Australian Plague Locust Commission	927,971	
Sundry Expenses	6,925	1,696,455
Balance as at 30th June 1985		352,143

During 1984-85 the fund repaid to the Treasury the final outstanding loan of $362,000.

Swine Compensation Fund

This fund was established in terms of the Swine Compensation Act, 1982, whereby owners may claim compensation for pigs destroyed because of disease and for carcases condemned as unfit for human consumption. A portion of the fund may also be applied towards meeting expenditure on research into diseases of pigs or problems affecting pig production. Income is derived from interest on investments.

The following is a summary of the operations on the Swine Compensation Fund for the financial year ending 30th June 1985.

	$	$
Balance as at 1st July 1984		1,553,660
Receipts		1,877,649
Payments		
Interest	323,989	
Compensation	25,372	
Administration Costs	19,089	
Research Costs	90,000	
Boar Testing Station	201,973	336,434
Balance as at 30th June 1985		1,541,215

The above closing balance includes investments currently held with the Treasury of $1,550,000. This amount is redeemable in units of $50,000 where the cash balance falls below the invested amount.

Veterinary Surgeons Act, 1923: Receipts and Payments

This Act provides for the establishment of a Board of Veterinary Surgeons for New South Wales. Fees and penalties collected are paid to the credit of Consolidated Fund from which the administrative expenses of the Board are met.

Below is a statement of Receipts and Payments for the year ended 30th June 1985

Previous Year		
$	*Receipts*	$
77,139	Roll Fees	80,138
4,662	Registration and Restoration Fees	4,210
—	Application Fees	305
460	Complaint Fees	520
82,261		85,173
	Payments	
52,511	Salaries etc.	57,593
3,600	Board Fees	3,980
2,835	Board Members' Expenses	5,282
679	Investigating Committee — Costs	955
2,662	Printing	2,121
6,879	Legal Fees	2,300
5,132	Disciplinary Tribunal Expenses	470
480	Refunds — Complaint Fees	460
2,801	General Expenses	14,121
77,579		87,282
4,682	*Excess of Payments over Receipts*	(2,109)

Fund Created by Wheat Marketing (Barring of Claims) Act, 1929

The Wheat Marketing (Barring of Claims) Act, 1929 barred all claims under wheat marketing operations conducted by the Government in earlier years and directed that after the making of specified grants for research purposes, surplus moneys from operations be paid to a fund for investment.

Income from investments may be applied, as the Minister of Agriculture and Fisheries determines, towards agricultural education and research. Financial results for 1984-85 are as follows:

Revenue Account as at 30th June 1985

Previous Year		
$	*Revenue*	$
9,983.01	Interest from Investments and Savings Bank	12,304.67
250.00	Donation from Grain Handling Authority	500.00
	Expenditure	
7,887.18	Commitments entered into during 1984-85	16,039.53
13.66	Bank Charges	4.26
2,332.17	Transfer of Surplus/Deficiency	(3,239.12)
	Balance Sheet as at 30th June 1985	
	Capital and Retained Earnings	
115,098.42	Accumulated Funds	111,859.30
115,098.42	Total	111,859.30
	Represented by	
	Investments:	
109,900.00	Trustee Securities	109,900.00 109,900.00
	Current Assets:	
6,564.26	Cash	5,084.03
1,724.16	Accrued Interest	2,975.27 8,059.30
118,188.42		117,959.30
	Less:	
	Commitments	6,100.00
(3,090.00)		(6,100.00)

Tidal Angling Fund

The Tidal Angling Fund is a Special Deposits Account funded by State contributions for the investigation, survey, management, development and protection of the sport and game fisheries in territorial waters other than inland waters.

Following is a statement of receipts and payments of this account for the year ending 30th June 1985.

	$	$
Balance as at 1st July 1984		15,302
Consolidated Fund Grant 1984-85		200,000
		215,302
Less Expenditure		
Salaries & Allowances	121,085	
Travelling Expenses	20,744	
Maintenance of Motor Vehicles and Craft	11,921	
Purchase of Plant, Craft, Equipment and Stores	27,696	
Fees	6,042	
Fishing Clinic Expenses	809	188,297
Balance as at 30th June 1985		27,005

Commercial Fisheries Exploration and Development Fund

This fund is a Special Deposits Account funded by State contributions for the benefit of the commercial fishing and oyster farming industries.

Following is a statement of receipts and payments of this account for the year ending 30th June 1985.

	$	$
Balance as at 1st July 1984		52,101
Consolidated Fund Grant 1984-85		2,800,000
Miscellaneous Receipts		11,454
Less Expenditure		
Salaries and Allowances	1,503,728	
Rent & Rates	35,356	
Property Maintenance	11,218	
Travelling	107,032	
Maintenance of Vehicles & Launches	292,363	
Printing & Advertising	13,278	
Postal & Telephone	41,645	
Gas and Electricity	70,044	
Fees for Services Rendered	71,119	
Plant, Craft & Equipment	303,983	
Other Expenses	7,810	
Books, Periodicals, etc.	27,116	
Payroll Tax	78,415	2,563,107
Balance as at 30th June 1985		300,448

Inland Fisheries Fund

The Inland Fisheries Fund is a Special Deposits Account used to meet the cost of administration, development and protection of the inland fisheries.

Funds are provided by the sale of inland angling licences, sale of fish from trout hatcheries and from State contributions.

Following is a statement of receipts and payments of this account for the year ending 30th June 1985.

	$	$
Balance as at 1st July 1984		86,275
Receipts		
Consolidated Fund Grant 1984-85	1,394,000	
Licences	922,469	
Sale of Vehicles and Craft	77,604	
Rents	8,323	
Sale of Fish	24,170	
Commonwealth and Other Grants	35,976	
Miscellaneous	15,475	2,478,017
		2,564,292
Payments		
Salaries and Wages	1,205,310	
Payroll Tax and Workers' Compensation Insurance	97,586	
Employers' Superannuation Contribution	89,327	
Maintenance and Running Costs of Motor Vehicles & Launches	170,616	
Travelling Expenses	106,676	
Stores and Materials	153,010	
General Expenses	20,407	
Purchase of Motor Vehicles & Watercraft	111,819	
Plant and Equipment	244,937	
Capital Debt Charges	10,470	
Postal & Telephone	48,796	
Printing, Advertising & Publicity	2,422	
Gas and Electricity	19,662	
Property Maintenance	110,690	
Capital Works	5,299	
Repayment of Advances from Treasury	5,687	2,402,714
Balance at 30th June 1985		161,578

APPENDIX IV Agricultural College Courses and Student Statistics

Murrumbidgee College of Agriculture

Enrolments 1985	Male	Female	Total
Murrumbidgee College of Agriculture			
Certificate in Agriculture	52	6	58
Advanced Certificates:			
Agriculture	11	2	13
Irrigation	17	1	18
Certificates Gained 1984			
Murrumbidgee College of Agriculture			
Certificate in Agriculture	48	3	51
Advanced Certificates:			
Agriculture	10	2	12
Irrigation	5	—	5
Rangeland Management	—	1	1
	63	6	69

Short Courses	No. of participants
Fodder conservation machinery maintenance	72
Landforming course	21
Sheep conference	20
Irrigation management workshop	20
Conservation farming course	60
Farm management workshop	18
Rowcrop school	80
Landforming course	26
CYSS truckdriving school	8
Recruitment seminar	15
W.R.C. computer training course	33
Farm management workshop	10
Photography school	15
Farm office management workshop	6
A.D.A.B. seminar	21
A.D.A.B. seminar	17
Careers advisors' seminar	21
Lions Club youth camp	23
Soybean harvest field day	60
Livestock judging competition	30
Trees on farms workshop	15
Trees on farms course	25
Introduction to computers school	10
Pakistan overseas aid program	12
Farm management workshop	21
Librarians' conference	8
Introduction to computers school	10
Communications skills workshop	29
Farm management workshop	22
Farm office management workshop	10
Landforming course	18
Administration officers' workshops	20

C.B. Alexander Agricultural College

Enrolments 1985	Male	Female	Total
C.B. Alexander Agricultural College			
Certificate in Agriculture	51	16	67
Advanced Certificate in Agriculture	40	9	49
Dairy Apprenticeship Course	29	4	33
Correspondence Courses Production Unit			
Farm Management	339	80	419
Farm Office Management	59	134	193
Certificates Gained 1984			
C.B. Alexander Agricultural College			
Certificate in Agriculture	44	15	59
Advanced Certificate in Agriculture	32	12	44

Short Courses	No. of Participants
Use of models in farm decision making	17
Cooperating farmers' workshop	15
Department of Agriculture Economists' Conference	45
Dairy Apprenticeship Open Day	53
Angus Society Beef Breeders' School	25
Beekeepers' Field Day	250
Establishing a Small Farm course	76
Clerks of Petty Sessions' Conference	17
Pesticides School	60
W.E.A. Summer School	76
Tocal Summer School	43
Establishing a Small Farm course	84
Running Your Farm as a Business Seminar	95
Viticulture Seminar	30
Department of Agriculture Managers' Conference	50
Tocal Small Farms Field Days	5600
Environmental Education Conference	50
Coopers (Australia) Staff Development Seminar	20
Computer Training Workshops	30

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